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The Physiotherapy Review

Vol. XI No. 1

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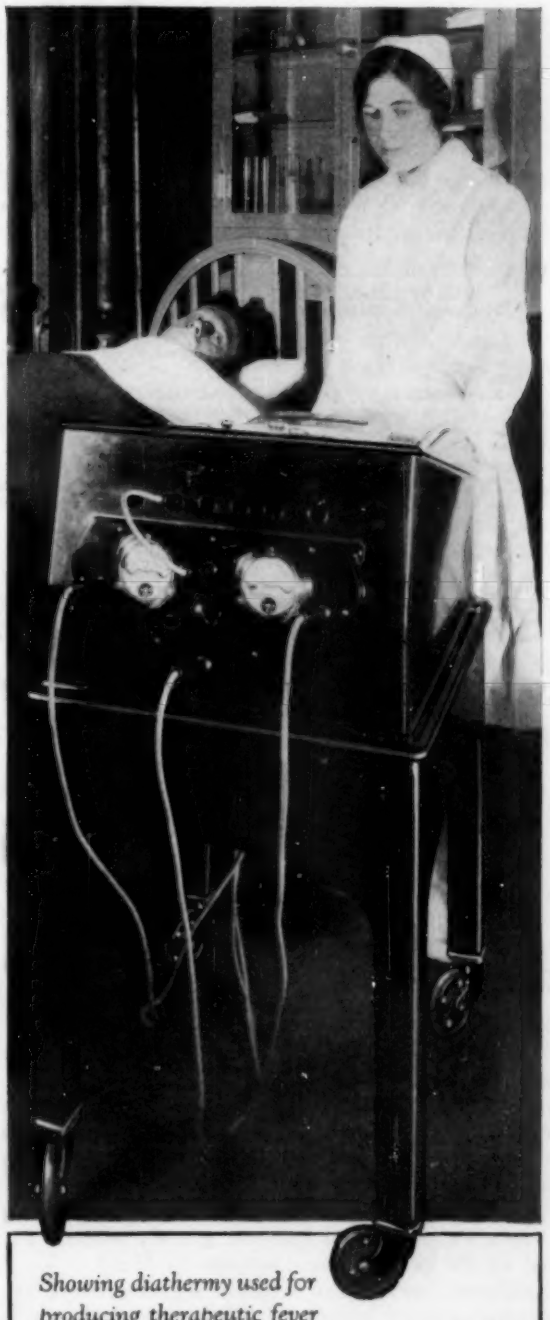

Showing diathermy used for producing therapeutic fever in the treatment of dementia paralytica. Photo courtesy Northwestern University Medical School, Neurological Clinic, Chicago.

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The Symptomatology and Treatment of Alcoholic Peripheral Polyneuritis

By Albert T. Steegmann, M.D., Cleveland, Ohio

The alcoholic form of peripheral polyneuritis is the most prevalent type. Although the condition is chronic, it may have an acute and rapid onset. It usually results from the consumption of strong liquors for a long period of time.

The interesting array of both motor and sensory symptoms presents a clinical picture that is both characteristic and variable.

The interpretation of the symptomatology is made much more understandable by our present knowledge of the physiology of sensation; the pioneer work of which was begun in the English school by Sir Henry Head. Later work by Stopford in England and Brouwer in Holland have supplemented but not greatly altered the views held by the now classical studies of Head.

In a peripheral nerve from a spinal segment there are fibers carrying sensory impulses to the spinal cord tracts from the skin, muscles, joints and tendons, and motor fibers to the muscles from the anterior horn cells in the spinal cord. The first type of sensation is called old sensation (protopathic sensation of Head; vital or paleosensibility of Brouwer). This type of sensation is called old because it is primitive and is found in all forms of life in the evolutionary scale down to and including fishes. In man it represents the appreciation of pain and extreme of heat and cold by the skin and deep pressure pain by the muscles and deeper lying tissues. The pain is diffuse, irradiating, poorly localized, very disagreeable, and carries with it an emotional awareness or feeling tone. Such a type of sensation is necessarily vital because it protects the tissues from noxious or damaging stimuli. The fibers carrying old sensation are constitutionally resistant to neurotoxins such as alcohol.

The second type of sensation is called new sensation (epicritic sensation of Head; neosensibility of Brouwer). This type of sensation is called new because it develops later in the evolutionary scale. It is not found at all in fish, and in land animals, it is found in direct proportion to their place in evolutionary complexity. It reaches its highest development in the higher mammals and man. By means of this sensation, there is appreciation of light touch such as may be produced by drawing a feather or soft brush across the skin, and not only can the touch be appreciated, but its exact location can be determined. In the acral portions of the body, particularly the hands and feet, by means of new sensations one can recognize the position of two fine points simultaneously applied to the skin. Discrimination of fine degrees of temperature (between 27 deg. C. and 38 deg. C.) are recognized.

The position of one portion of the body with relation to another and the localization of deep pressure can be

determined. This fine discriminative type of sensation serves the animal rather as protection than a means whereby the nature of the environment is recognized. The fibers carrying highly specialized sensation are less resistant to neurotoxins than the vital type and consequently suffer more damage in an alcoholic neuritis. Another interesting physiological fact is the peculiar intergration between these two types of sensations. When the new sensation is pathologically diminished or destroyed, the old sensation is apparently released with all of its diffuse disagreeable character, quite unlike that found normally on the external portions of the body.

Now to apply these principles to the interpretation of the symptomatology of a case of alcoholic polyneuritis. The symptoms may develop slowly and insidiously, depending on the amount and nature of the alcohol absorbed. The pathological disturbances of the sensory and motor nerves may be longitudinally studied or the process may be so rapid and acute that one cannot distinguish between the different stages. For that reason a variability in the clinical picture is to be expected.

When the case has not developed too rapidly to be followed we can usually elicit this history. The patient will at first notice a tickling sensation, a tingling described as "pins and needles" or "insects crawling" on the skin. These are commonly called paresthesias. These sensations will be more noticeable in the hands and feet, particularly the feet. There may be some prickling, tingling sensations, hardly to be described as pain. This is to be interpreted as irritation of fibers carrying new sensation. At almost the same time, however, the patient may complain of severe burning pain in the soles of the feet or paroxysms of diffuse extremely disagreeable pain in the legs. This is probably due to the irritation of fibers carrying old type of sensation. At this stage clinical tests will disclose hyperaesthesia of the extremities. In the early stages of the destruction of fibers carrying new sensation one can find a relative hypo-aesthesia or anesthesia; but at the same time the response to painful stimulation is more intense as the old sensation is still present and new sensation is diminished. As the degeneration progresses the arms below the elbows and the legs below the knees become anesthetic to both light touch and pin prick. Old sensations may be preserved for several months as shown by pressure on the soles of the feet or by firm pressure on the muscles of the calves. Thus we see a progression of symptoms, first irritation then degeneration of various types of fibers. The fibers carrying new sensation, as previously stated, are damaged more.

The above discussion has concerned sensory changes; but as peripheral nerves are mixed nerves motor changes are also to be expected and progress simultaneously with the sensory changes. During the irritative stage weakness is noted which may rapidly go on to complete paralysis and atrophy in the later stages. In the alcoholic type of polyneuritis the sensory changes are usually more pronounced than in the other types; but the motor changes are also a predominant feature. The characteristic involvement of the extensor group of muscles in the arms and the peroneal group in the legs giving a wrist drop and toe drop is striking. The legs are characteristically more involved than the arms. Trophic changes in the extremities are not a troublesome feature. In this type of neuritis trophic ulcers are very uncommon.

The aim in the treatment of alcoholic peripheral polyneuritis may be approached from several viewpoints. First, supportive treatment during the period of nerve destruction and regeneration. Second, the prevention of contractures which may produce severe deformity if allowed to develop. Third, establishing proper rapport with the patient's mental attitude.

Absolute abstinence from alcohol is the first essential of treatment. The physiology of sensation is useful in determining the type of supportive treatment to be given at various stages. During the acute, painful stage continuous dry heat should be given by means of a light cradle or heat lamp. The extremities should be wrapped in cotton and supported in such a way as to prevent contractures. That means a right angle splint for the feet and a cock-up splint for the hands. To prevent contractures at the knees an extension on the splint of a few pounds of weight is necessary. Gentle stroking and kneading of the muscles may be begun as soon as they are no longer painful. Active massage and the galvanic current may be started when all pain and tenderness have disappeared. As soon as the wrists can be manipulated the cock-up splints should be removed and the wrists supported on the extensor surfaces by means of an elastic extensor support fastened to gloves, thereby giving extensor muscle action, temporarily.

The prognosis is usually good, but the condition runs a course of from seven months to two years. Recovery in the legs may not be entirely complete but it is in the arms, as a rule.

Recurrences are frequent if alcohol is again used. The nerve fibers, when once damaged, are more susceptible to the same toxic agent.

In treating the neuritides, because the progress is slow, the patient in the average hospital where extensive physiotherapy can not be used may become quite discouraged. He appreciates "laying on of the hands." It helps to keep up his morale. We must remember that "the patient has the disease as well as the disease has the patient." The physiotherapist by her contact with the patient can not only apply scientific procedures but can also do a great deal to encourage and interest the patient during the long process of nerve regeneration with its subsequent return of function.

Physical Therapy and the Physicians' Obligations

Harold M. F. Behneman, M.S., M.D., Acting Chief of the Department of Physical Therapy in the University of California Medical School, San Francisco

Read before the Northern California Physiotherapy Association, San Francisco, November 18, 1930

Even before the citizens of Iowa started their long trek to Southern California, this State has long been the working headquarters and playground of all sorts of non-medical healers and practitioners. Despite the constant efforts of law-enforcing bodies and educational institutions, the curbing of activity of these people has been a very slow process. California not only has more registered physicians per capita than any other State in the Union, but also a like number of these drugless practitioners. The history of medicine all through the centuries proves well to us that the masses—in other words, the general public as a whole, have always been a detriment to the advancement of medical science. That is not true in any other field of history. The masses determine the history, the thought and the supremacy of nations. But they have always been a detriment to the progress of medicine. Advances in medical science and practice have been made only by individuals, and compared to the years that have elapsed, these outstanding names are relatively few. Medicine has always been dependent upon a few men of genius who have been the pillars and foundations of advancement.

History, therefore, has been merely repeated in California, as regards medicine and its allied specialties. The average drugless practitioner is neither endowed with nor bothered by medical ethics. The relation of most of them to honest medical practice has been that of an illegitimate child trying to mingle with and be protected by the legitimate ones, reaping some of the reward and sharing none of the burden. In attempting to shake off these parasites, the physician has had a rather rough time of it. The chief obstacle in his path has been the individual patient, who, as long as the world goes on, when he gets sick, is going to seek the fastest relief for the least amount of money. Often in this short cut to relief, the total amount spent has far exceeded what good sound medical advice would have cost, but that isn't thought of at the time. The next problem to the busy physician has been the legal efforts to register, regulate and investigate these cultists. That takes a good amount of money and still more time, neither of which has ever come very often to the average medical practitioner. Also, during the long years wherein one doctor of medicine is being trained and graduated, many, many crops of faddists have settled down to the business of treating the sick. The physician has the tightest code of ethics of any profession—so much so that it has undoubtedly limited both his income and his clientele. But, alas, not so the drugless healer. To him the lanes of publicity are wide open with no detours. He has the willing press, in all its forms, newspapers, magazines and pamphlets. He has been able to orate from any and every soap box available without molestation. He has used the mails, as well as the drug stores. And last, but not least, the channels of the air have been lately vibrating with his endless stream of advertising nonsense. Turn your radio dial to almost any station between eight and eleven in the morning and you will hear some of the most astounding statements and vicious lies that go out to the unaware, financially embarrassed and trusting laity regarding their health. It will disgust you—but there is no law to curb it; our only attack is to reason and plead with the owner of the station, which takes more time and more united effort.

Now what has all this to do with the present status of Physical Therapy? In my mind it has much to do with it. Unfortunately, this branch of medicine has been pounced upon by these quacks as a money maker par excellence. From the time of Hippocrates and of Aesculapius with his temples of health, the world has been benefitted by massage, sunshine, and exercise. There is a very old Italian proverb which reads "where the sun does not enter, sickness does." We have plenty of evidence all through the centuries of the tremendous part these forces have played in the healing art. Then in later years has come electricity with its healing values, but also unfortunately with its psychological effect upon the average patient. It is my own opinion and I believe it is shared by many others, that electricity forms the smallest part of Physical Therapy. Yet, it has, because of its simplicity of administration, its economy and its psychology comprised eighty percent of the bag of tricks of these itinerant therapists. A good number of these people have absolutely nothing but a highly polished machine, not only useless but dangerous in their hands. True, even these seem to help patients, but so does the psychiatrist and the psychologist, without drugs or instruments.

Honest physical therapy has been greatly hampered in its advancement by these people. Even now that laity can purchase practically any instrument or machine used in physical therapy practice from many concerns, and moreover by paying a mere city license fee, they can put up their sign and treat the sick, without training, without investigation and without ethics. Now, you members of this association have done more than any one body to lift this specialty up to the level it belongs, and the American Medical Association has greatly helped in its formation of the Council on Physical Therapy. But you have often asked yourselves why doctors of medicine seemed so slow and loath in open-armed acceptance of all that your subject has to offer. And why is it? Why, for instance have San Francisco physicians and educators been so tardy right here in the very feeding ground of therapists? Part of the answer you already know, from my brief review. The doctor has been disgusted by the false claims, the rotten ethics, the high-pressure salesmanship, and most of all, the unproved claims of these various methods of treatment and the bewildering mass of unscientific and uninvestigated machinery. From the start these so-called physiotherapists have been concerned only

with treatment. The physician is trained in just the opposite way; he practically studies, eats and sleeps diagnosis—finally considering the methods of treatment.

Now aside from all this, consider for a moment, the type of apparatus salesman that has been battering down the doctor's resistance these past few years. You know as well as I do, that hundreds of thousands of dollars have been wasted by physicians in purchasing worthless, even ridiculous equipment. They have been sold electricity—not massage, heat and exercise, etc. Before the Council on Physical Therapy was organized, they felt there was no one to turn to for competent, honest advice. This situation has been particularly distressing in the country districts, where the fickle laity added to the doctor's troubles by hearing of or seeing these highly polished gadgets, demanded these and made his existence difficult until he surrendered. The whole situation has been one to make the physician suspicious and amused at times. As a result we have one of the oldest forms of therapy in the world, and yet until very recently but a half dozen of all America's medical schools included it in their curriculum. Until this present year, medical graduates from our own State University Medical School had absolutely no lectures in any phase of physical therapy except what they might pick up in the outpatient clinics from the various specialties. What else can we expect but the present situation? Your association has done immeasurable good toward remedying this situation and it has the admiration and backing of the American Medical Association, particularly of the Council.

Now what can the physician do about this situation? Well, it seems to be up to a few of us, to convince the many. In my opinion, the doctor is wasting valuable time in trying to convince the laity of their misdirected faith. That can be done by other bodies, educational in character, through the press, the radio and the school. What the physician who believes in physical therapy must do, it to go after the unbeliever and the uneducated in his own ranks.

How is he to do it? First, by having the subject put into the curriculum of every medical school, to be taught by someone with an openminded attitude toward the subject, and preferably someone with an investigative mind. Second, by the presentation of cases and papers before the various medical societies. Third, by publication in both lay and medical journals of articles dealing with the various aspects of physical therapy and occupational therapy. Fourth, by getting the interest of women's clubs, junior leagues, lodges and fraternal orders, who are always susceptible to the influence of any subject which concerns the welfare of the child, especially of the crippled child. Fifth, by creating a section of physical therapy in the state medical society. Sixth, by boycotting those firms who sell dangerous apparatus to the laity, and lastly, by practicing the methods of physical therapy themselves whenever indicated, always with the help of a trained technician, but presenting the treatment themselves.

I realize many of these things have been done in certain places, but again in some areas none of these things have been done. The profession as a whole except some specialists such as the orthopedists, have been very tardy in San Francisco, in their acceptance of this subject. I think you can realize why the doctor has raised the eyebrow and often smiled when another colleague mentions physiotherapy. It's been very unfortunate that the laity have been denied the ethical scientific application of these various modes of therapy, just because it grew up in bad company.

It gives me a great deal of gratification to tell you of the present and future situation at the University of California Medical School. After due thought and consideration, the subject of Physical Therapy was added to the curriculum of the school this Fall. The Senior Class of the medical school is divided into three sections—medical, surgical and obstetrical (the latter dividing its time with pediatrics). Each group in medicine receives eleven lectures in physical therapy besides other demonstrations in the outpatient clinic, to which they are always welcome. Then the course is repeated, so that thirty-three lectures each year are given. The Junior Class gets an introduction to the subject by four lectures given at the San Francisco Hospital before the entire class in the month of January. Plans are made for their visit to other hospitals, where equipment is different or greater than what we have at present in ours. Literature from the Council is given out, as well as digests and reviews printed by a well known manufacturer of equipment. The General Electric Company has cooperated in seeing that any apparatus desired is present in the classroom, with an attendant to help in and explain its operation. The department head gives six lectures and leaves the other five to his full time department assistants and to volunteer workers qualified in their subject. As you may imagine, the physiologic and physical fundamentals underlying the rational use of physical therapy, is what is stressed in these lectures. We want the student to know *why* he wants, *what* he wants and *what* he hopes to accomplish. This year the lectures included light, heat, electricity, massage, exercise, medical gymnastics, hydrotherapy, posture, and moving pictures of the uses of electricity in surgery. The first lecture is always an introduction to the subject, reviewing the bibliography, the work of the Council, of your association, the history of the subject and its relation to medical practice. We are meeting with a very generous response this first year, and it is most gratifying to see the interest displayed by these future medical practitioners. They are going to go into practice knowing at least the fundamentals of physical therapy, and will know where to turn for honest and immediate advice whenever they want it. It is also gratifying to note that in the section oral final examinations the physical therapy instructor is requested to be present to interrogate the students.

The university plans the erection of a new outpatient department building in the near future. Ample space and detailed plans have been provided in this building for the department of physical therapy. At the present time, as is the case in many schools, we are limited for space. The outpatient department is growing all the time and the patients are increasing annually. We have but one full time technician in the outpatient department and one in the hospital. But we have had from two to five volunteer workers who want training or who are interested in the work. In the year ending last July the department gave 12,389 treatments, with over five hundred new patients. Last month, the outpatient clinic alone gave over 900 treatments, and this is with limited space, limited equipment and still more limited personnel. Most gratifying of all is the fact that the annual budget request, which has been about six thousand dollars for the last few years, has been materially increased for 1931-1933. We have definite plans for the purchase of equipment as well as increased personnel, which is more important. The university hopes in the near future to have a full-time director on salary, probably a man with a foundation in physics and physiology, with inclination more toward research than practice. We want to find out by

actual investigation the why and the wherefore of some of the empirical results we have been getting in the varied fields of physical therapy. There is an infinite amount of research to be done on this subject, and many fields in which we suspect these various kinds of treatment will prove beneficial. The medical school is the workshop for such problems.

As soon as personnel and equipment permit, there will be a training school for technicians. This course will be at least nine months in duration and possibly longer. It will include several months basic training in anatomy, physiology, physics and biochemistry. When we do have this school we want one worthy of nationwide recognition and will not start it until it can be started right. Meanwhile, any willing worker with certain qualifications who can prove her interest in the subject is welcome at any and all times in our present clinic. The medical school is always a teaching institution, and it is a mutual affair; as they gain by our instruction, we gain by their help. Any member of your Association is always welcome, because we want not just your support, but your criticism as well.

I feel a summer course of four to six weeks for physicians only will be a desirable addition to our plans. But as you know these courses need careful consideration and planning to assure material, instruction and supervision. One of our biggest problems at the University is the fact we must at present maintain two separate units, one in the outpatient department and one in the hospital; naturally both need many duplications in equipment, as in the present architectural arrangement transportation of equipment from one place to another is not feasible.

As all this materializes, other plans will gradually take form, none the least of which is an occupational workshop, such as the Junior League Curative Workshop in Milwaukee, the department at the University of Chicago, and at Michael Reese Hospital in Chicago. These are not just dreams; they are well laid plans, approved and certain of rapid consummation. It has been a slow advancement, but we are off to a splendid start, are receiving wide encouragement and will continue to advance in steady strides. We need your help, and are always appreciative of it.

There are some enemies upon whose own battlefield for various reasons it is neither wise nor sane to enter into warfare with. Lime the Australian bushmen, these charaltans who have infested the physical therapy field have their own peculiar, tricky methods of warfare. Our ethics, our time, and other reasons prevent us from combatting them in such fashion. But a little slower and far more permanent is the gradual replacement of their inefficiency by our better designed methods and education of the general public. The high ethics of the medical profession have often proven a pretty big burden in actual practice but the final acceptance and use of therapeutic methods, by ethical physicians, even though they may be tardy, means it has proven value and deserved recognition.

Scoliosis

By A. Steindler, M.D.

American Physiotherapy Association Meeting, Detroit, June 25, 1930

For years the problem of scoliosis treatment has fallen in ill repute with the orthopedic surgeon; today, one is justified in approaching the topic with a certain degree of optimism. The principal reason for a better outlook in the future lies in the fact that a closer correlation between morphological and functional aims in scoliosis treatment is being developed.

On more than one occasion radical methods have come to the foreground and, for a time, have held the field; for instance, forcible correction at the expense of stability of the spine; or, on the other hand, abolition of all motion by fusion, to secure stability. Yet, we can recognize a wide reaction against extremist's views, in the fact, that radical methods are being modified, or that combinations of methods are adopted. We take no issue with the radical treatment in principle, be it of forcible correction or that of abolition of spinal motion.

It seems to me that exception should be taken not so much to the principle of the method, but rather to its universal and unlimited application.

Both the method of forcible correction and that of abolishment of spinal mobility interfere with the function of the spine; forcible correction by relaxing the spine and destroying its stability, spinal fusion by destroying the important function of spinal movements.

In this respect these two principles are in contrast with the principle of correction and stabilization by muscle development, gymnastics, and self-correction, which latter method attempts to improve or correct the deformity without interefering with any of the physiological functions of the spinal column.

But this interference with the function of the spine, which is involved in both the method of forcible correction and to that of spine fusion, does not signify that they should not be employed, that they, according to our present light on the subject, are not justly entitled to a certain range of application. In the case of forcible correction, the loss of stability may, and possibly is, within certain limits, retrieved by subsequent development of muscle control along the lines of kinesiotherapy; and in the case of spinal fusion the loss of mobility may and often is, greatly outweighed by the gain in stability and weightbearing function of the spinal column; and, furthermore, where the combination of forcible correction with subsequent spinal fusion is used, spinal stability is obtained under the additional advantage of improvement of form, even though the function of mobility of the spine is lost.

On the ohter hand, one must admit that the aim or objective of preserving both mobility and stability by development of muscular control, does not necessarily entitle the conservative method to the full range of material, or even to a large majority of cases; because there are, as will be shown, definite limits to this method, especially in regard to correction, and because morphological correction or body alignment and stability of the spine are strictly inter-dependent.

Body alignment means an average symmetrical distribution of body weight on both sides, and a normal relationship of shoulders, pelvis and ankles between themselves and to the line of gravity. This obtains naturally in the straight normal spine. It may also obtain in a double or triple curved spine, provided only that one curve is compensated by one or more others, of equal length and intensity, so that the deflection of the gravital stresses, caused by one cruve, is offset by the others and an equal distribution of weight stresses to both sides is procured within the length of the spine itself. Such a spine we call compensated. The incompensated or decompensated spine is one in which the rearrangement of the gravital stresses is produced by movements of the pelvis and the hips, which are made to protrude in opposite directions (overhang). The secondary curves are called compensatory and they can either be found as the result of nature's attempt to produce an automatic realignment of the body, or they can be produced artificially by making use of the sections of the spine beyond the primary curves, which have retained their mobility. Whenever such a realignment by means of counter curves is obtained, muscular apparatus of the spine may be developed to a point where it actively maintains the spine in this state of realignment.

The so-called compensation treatment of scoliosis, advocated by the writer, consists essentially in the production of these secondary or compensatory curves. The alignment of the body, i. e., equal distribution of body weight and normal relation of line of gravity to pelvis and shoulders, which has been lost during the progress of scoliosis, is now regained by these counter curves. To develop these curves we make use not only of the movable portions of the spine above and below the primary curve; but also of the ends of the curve itself, which are less rigid than its center; so that in the end the primary curve will become the shorter, and the more so, the less rigid it is.

1. If we subject to this procedure a so-called postural curve, i. e., one which is not yet structurally rigid, we soon see that the primary curve becomes submerged, or drawn into the counter curve, so that now one long curve of the converse order results.

This conversion of the curve proves that it has not attained what is commonly understood as structural rigidity, and that it is, by virtue of its conversibility, amenable to complete correction.

2. We will next encounter a series of cases of disalignment in which the curve is rigid, but is so situated and so short that complete realignment by counter curving is possible. In these cases the realignment of the body by counter curves is not followed by a disappearance but merely by a shortening of the curve and an "S" or a triple curve "S" results.

This compensation involves not only the lateral but also the rotary element; counter rotation is effected by twisting the pelvis and shoulder in a direction opposite to the rotation of the primary curve. To satisfy the condition of maintenance of correction we must next develop active muscle control. This presupposes a musculature which can be educated to the task. And it can be done almost in all cases in which there is no organic affection of the musculature, such as we see in paralytic cases.

When these two prerequisites are met, pertaining to

the site and extent of the curve and the condition of the muscular apparatus, the compensation treatment finds its proper place; it applies to mild and moderate cases of habitual, and rachitic, and mild cases of congenital cord paralysis types. So far as we could determine, about 50 per cent of our current material proved suitable for the compensation treatment alone.

3. Next we encounter groups of cases in which disalignment it too marked, the rigidity and extent of the curve too great to allow of compensation by the simple expedient off-setting compensatory curves under the primary. There, force must be applied upon the curve, if correction is desired. This situation applies to the more advanced habitual, rachitic, and some congenital cases. Be it remembered, however, that forcible correction always carries with it an element of relaxation of the spine, and that relaxation greatly accentuates the problem of maintaining the spine in correction by active muscle effort. Again, the force applied may or may not be great enough to overcome the structural resistance of the curve. If the force applied to correct the primary curve is great enough to break its resistance, then a correction or improvement of the curve results; if it is not, the effect of the force expresses itself more or less in the formation of these compensatory curves above and below. The latter case is by far more frequent. Now, as we have seen, the problem of maintaining the spine in balance by active muscle effort has been rendered more difficult owing to the relaxation. Still, by long continued and vigorous preparatory and after treatment it can be accomplished in a certain range of cases. Here we have a combined method of forcible correction and gymnastic muscle training of which Galeazzi's is the best representative.

4. We next encounter cases which are not only too rigid to yield to compensation attempt of alignment, but which for either alignment or correction require a still greater degree of force, entailing an amount of relaxation with which any amount of muscle development would be unable to cope; this applies to the more advanced habitual, rachitic and congenital cases, so severe that no force within limits of tolerance could realign them. Finaliy there are cases which, if realigned, could not be made to maintain active balance because there is no adequate muscle material at disposal, as in most paralytic cases. It is obvious that in the latter two groups one must relinquish the hope of maintaining balance by active force, and, since stability of the spine must be procured, one must fall back upon internal fixation (fusion) or braces.

From all this it appears that there is no one standard method; rather, there is a certain range of indication for any one of several methods; the compensation method, the forcible correction combined method, (Galeazzi, etc.), and the spine fusion (Hibbs, Albee). You see why there is no place for extremists in this problem.

In advocating and the developing of the method of compensation treatment, which will be shown in detail on slides or film, no issue is taken with the principle of spine fusion, or that of forcible correction; my protest is directed only against the universality of application of these methods.

Since the compensation method is entirely a physiological one and aims at re-establishment of alignment as well as balance control, and since, in doing so it destroys nothing of the remaining function of the spine, both in point of stability and mobility, it is the most conservative of the reconstructive methods mentioned and as such should have first claim upon the range of cases which may reasonably be considered to fall within its scope.

To delimit this range is not easy and the figure of 50 per cent of all cases coming under our observation is tentative, though it is fairly accurate.

In a certain number of cases, which have progressed beyond the stage suitable for simple compensation treatment, compensation has, nevertheless, proven to be a necessary prerequisite for the following fusion, because without previous realignment we find that most of the fused cases break down at a certain level.

Above all, it is necessary to understand that there is a certain range and also a certain limit for natural rearrangement of body balance, by the compensation method, and another range and another limit for the adaptation of tissue after the forcible derangement of structure, as in the methods of forcible correction, and finally still another range of cases in which either rearrangement or adaptation of structure is no longer possible and in which the uncontrollable movement of the spine must be sacrificed in the interest of its stability. We must cease to be interested in the universality of any one system of treatment; rather, our concern must be to allocate, along the lines of careful discrimination, for any one method in its proper place.

Iowa City, Iowa.

Mastoid Operation for Facial Paralysis

Report of a Case, by Noble Dick, M. D.

C. E. T., (Case No. A-26794), age 29, male, Norwegian and seaman by occupation, entered the Virginia Mason Hospital March 10, 1928.

The family and past histories were irrelevant.

The present illness dates from February 15, 1928, when he fell down the hold of a ship and received a head injury. He was unconscious in a local hospital at his home, for three days. Thereafter his condition improved slowly. He reached Seattle March 10, 1928, and was immediately admitted to this hospital. Upon admission the patient was ambulatory but was afflicted with a complete right sided facial paralysis. The completeness of the paralysis indicated a peripheral nerve injury rather than a central lesion.

The physical examination was entirely negative except for the unilateral facial paralysis. The eye, ear, nose and throat examination, as made by Dr. J. T. Dowling, at the time of the patient's admission to the hospital was as follows: The eyes were normal in appearance. The pupils reacted normally to light and accommodation. The eye movements were normal. The patient was unable to close the lids of the right eye. The left ear was normal. The external auditory canal of the right ear was flattened from above downward. There was a scar and small perforation of tympanic membrane, as well as deafness of the right ear. The entire right side of the face and forehead remained perfectly smooth on any attempted facial movement. No fracture of the skull could be demonstrated, roentgenologically in stereoscopic plates of the head. The urine was normal and blood Wassermann was negative. The pulse and respiration were normal.

Massage and electrical treatments to the right side of the face, as well as general hospital care, were ordered. The patient was discharged from the hospital on March 26, 1928, after some improvement in his general condition but no improvement in his facial paralysis. He was instructed to continue the massage and electrical treatments and report to our office for frequent observations.

Examinations at frequent intervals showed practically no change, except perhaps in the right external auditory canal. The swelling in the canal was reduced to one hard mass, protruding from the posterior superior wall, which obscured about one-third of the tympanic membrane.

The above mentioned mass caused us to consider future radical measures. Frequent unsuccessful medical attempts were made to reduce the size of this mass or to remove it. We finally concluded that the mass was bone and that surgical removal was indicated. We told our patient that it was our opinion that the mass, in the right external auditory canal, was a part of the facial canal, which had been displaced forward by a fracture through the mastoid bone. We, therefore, advised a mastoid operation, having in view the removal of the displaced fragment of bone which we believed was causing a pressure paralysis of the right facial nerve. Nothing could be promised the patient as far as complete restoration of the function of the nerve, but he soon realized that he had everything to gain by the operation.

On May 23, 1928, a mastoid operation was performed by Dr. J. T. Dowling and myself, and our diagnosis was confirmed. There was an old fracture through the mastoid bone which displaced forward the facial canal. We removed the displaced bone and freed the badly traumatized facial nerve, in which we could demonstrate no severance. The cavity was then packed lightly and the wound was closed as in the usual mastoid operation. The patient was discharged from the hospital on June 13, 1928, after an uneventful recovery from the operation.

The facial paralysis, of course, was unimproved at that time. Massage and physiotherapy were resumed as soon as the wound was healed. The patient was discouraged and disappointed. We told him that probably several months must elapse before the end result of the surgical procedure would be evident.

SHOWING ABILITY OF THE PATIENT TO USE RIGHT FACIAL MUSCLES AND SMILE FOLLOWING MASTOID OPERATION AND FREEING OF THE RIGHT FACIAL NERVE.

On October 1, 1928, the patient returned and told us that he thought the right side of his face was "waking up." From that time we saw a gradual improvement in the right side of the face, with the exception of the forehead. The fibers of the facial nerve supplying the muscles of the forehead have not yet been restored to complete function, but a faint trace of movement can be seen, which we hope is a sign of improvement.

The illustration shows the patient's present condition.

The patient was last seen on Nov. 14th, 1930. At this time further improvement was noted, even to a wrinkling of the right forehead.

Seattle, Washington.

Rational Therapy in "Rheumatism"

By Edward A. Rich, M.D., Tacoma, Wash.

I have always been depressed with the history of therapeutic measures in combating chronic arthritis, neuritis and related disorders. I have seen persistence, faithfulness and optimism worn to the bone in the physiotherapy work shop. In years past, failure rather than marked success has been the ultimate outcome of all too many well-meaning courses of treatment.

In the treatment of arthritis the medical profession can lay no measure of its inadequacy upon the trained therapist. It must acknowledge that until the past year and a half it has been practically helpless. The treatment of choice has all too often been a superficial prescribing of drugs, a failure to accomplish any results worth while, and finally a reference to some other climate as a sure way of being rid of the case.

It does little good to lay blame. Credit, however, is today due the bacteriologists and the internists for their persistence at experimentation. For today Crowe, Swift, Wyatt and many others have placed in our hands most valuable weapons with which we as a profession may wage a winning fight against the insidious cause of the greatest economic disturbing disease of the whole category of chronic diseases—chronic arthritis.

For many years it has been common knowledge that chronic arthritis and its allied conditions have had a basic cause in bacterial infections. We have worked upon the hypothesis that either bacteria or microbic toxins invading the delicacy of human joints or interfering with the histology of the ends of bones have caused the well known atrophic or hypertrophic arthritic changes that make up the rheumatic diseases. The deformities, the contractures, the swelling and the pain have all been secondary results of said infectious agents.

And for a good many years medical men have attempted by means of phylacogens and bacterial vaccines to approach these joint infections. We know now that some of the measures of vaccine approach of the past have been based upon faulty premises. We can see now that the theory of immunization by the process of reactions, and attempts at repair by means of stimulated anti-bodies were doomed to failure because in principle these measures insulted tissues already diseased and added impossible burdens to weakened cells.

The modern conception, which seems more rational, is that arthritis in its varied forms is due both to an invasion by bacteria and to an allergic invasion of joints and bones by some toxin or toxicant originating in some distant focus somewhere in the body. Based upon this conception the recent bacteriologists have pointed the way to a vaccine treatment of great value. They suggested the use of a polyvalent vaccine of all the germs known by experimentation on animals and humans to be productive of arthritis and these germs in all their attenuated forms.

And more important still they led the way to the *use of such vaccines in such minute dosage as not to cause reactions and deleterious effects.* Instead of using hundreds of millions of germs in frequent innoculations they suggested a few thousand. Just enough to stimulate the mildest desensitization of the diseased cells in the infected joints. No load is placed upon such already overactive cells, but just enough stimulation to spur them on to slightly stronger efforts at self repair.

This principle leads us to the greatest epoch making advance known in the treatment of arthritis. Hence, of primary importance in combating our chronic arthritic conditions, is the use of the proper vaccine in the proper dose at the proper interval.

THERAPY SECOND

To use vaccine and medical treatment alone is not enough. Joints are sore, swollen and contracted. Local treatment is of vital importance, and now comes the most essential physio-therapy. Now, the therapist is not working against hope. Now, we have less depression regarding the final outcome. Now, persistence will have its reward. Now, any rational therapist refuses to battle without the available armamentarium when confronted with so otherwise baffling constitutional disorder.

Physio-therapy uses heat and massage. I have not the opportunity to discuss the relative values of dry and wet heat. After years of experience we cling to hydrotherapy—Hot brine packs, hot towels, hot glucose baths, and colonic lavage. In our "Rheumatic Center" we have perfected the use of large heated tanks of glucose with the fluids ranging over one hundred degrees according to the condition. Glucose is easily kept sterile, holds the heat a long time, has osmotic powers, contains an astringent that hastily dries oozing, perspiring skin, and affords a vehicle of supplying heat easily borne at high temperatures. Glucose is a solvent, and when immersed, joints respond gratefully to massage. We believe that glucose is one of the best means of applying the needed hydrotherapy.

Nothing need be said further regarding the massage that follows heat immersion. We all know the value of soft, stroking long continued manipulation and its effect on reducing joint swelling, in toning up atrophied muscles, and in relieving soreness. It is needless to add, when talking to trained therapists, that the overuse of massage by too long or too rough manipulation is a damning procedure, increasing muscular fatigue and damaging already terribly sore joints.

Combined vaccine, constitutional orthopedic and physiotherapeutical treatment now offers cure to 80 per cent of our chronic arthritics who have not progressed into the state of gross joint deformity.

Coordination Exercises Under Water, in the Treatment of Spastic Paralysis, Following a Spine Fracture

By Beatrice Woodcock

On MAY 30, 1919, our patient, a young man of 19, dived into shallow water from a height of five feet. His head struck sand and when he came to the surface he could not raise his head out of water. His companions pulled him out, to find he was powerless to move. He was so dyspneic that he could only utter one word at one breath. He was then taken to a nearby hospital, where X-rays showed a fracture of the fifth cervical vertebra.

In MAY, 1920, he consulted Dr. Steindler. Examination showed atrophy of the muscles of the upper extremities and the Erector Spinae muscles. There was no conspicuous paralysis of the shoulder and upper arm, but a definite flaccid paralysis of the muscles of the forearm and hand. The lower extremities were markedly spastic, with contractures of the adductor muscles. X-rays showed a distinct crushing of the 5th into the 6th cervical vertebra.

In APRIL, 1921, tenotomy of the adductors and T. A. lengthening was performed. With the removal of the casts, the patient was instructed in exercises and returned home.

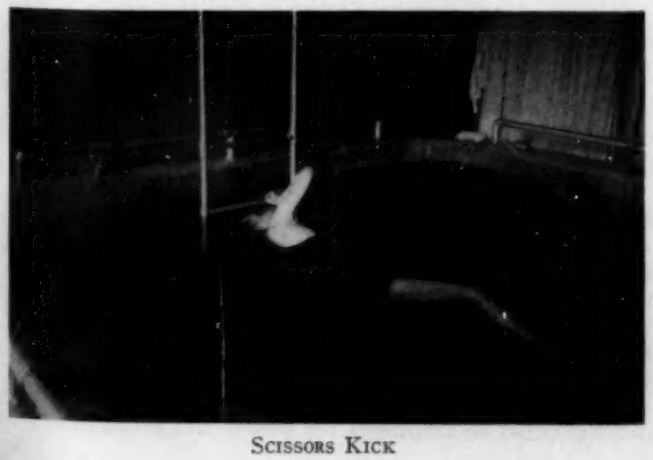
In MAY, 1929, the patient was seen again after eight years. He was unable to walk, except a short distance with great difficulty, on crutches. Was unable to stay at that time for treatment, but returned on NOV. 19, 1929.

TREATMENT

For the first two weeks exercises had to be given in the gym, as the new tank, which was being installed, was not then completed. These consisted of: 1. Stretching of the adductors in the Zander abduction machine. 2. Coordination exercises in the back-lying position. 3. Intensive walking exercises, between bars.

UNDER WATER TREATMENTS

These were given every morning and were followed up by walking exercises in the bars, in the afternoon. The object of the under water treatment was: 1. To get relaxation and relief from spasticity. 2. To develop muscles of the hands and forearms. 3. To teach coordinate movements. In order to get the desired relaxation, the water had to be warm, that is, 90° F. The stay in the water had to last at least one hour, as the longer the patient was in the water the more relaxed he became.



SCISSORS KICK

BICYCLE

The hands were treated with simple muscle training as in any other flaccid paralysis. As this patient had once been a swimmer, our aim was to teach coordination through swimming.

The first day the patient entered the tank no active or passive movements were possible. He was extremely spastic. He was encouraged to relax and float on his back, and was able to swim on the back, using the arms only, from the first.

Simple exercises were started, passive stretching and walking in the water holding on to the ropes. Within a few days the patient could actively abduct the thighs and the decrease in the spasticity was marked. Walking in the water was found much easier than previous efforts on land.

At the end of three weeks the patient found he could walk much easier in the bars. He could pick up his feet and, to use his own words, his gait became more "human and natural." At first all attempts to swim on his side and face were unsuccessful. However, after a few weeks of simple exercises, we started him on the scissors kick. This was followed up by the frog kick. Gradually all movements became more natural and easy, and he could stand erect without difficulty.

On DEC. 15 he discovered he could lie on his back and go through the bicycle exercise unaccompanied by muscle spasms. This was done with perfect rhythm.

On JAN. 8, while practising the dead man's float, the patient turned over on his back without assistance. Immediately he renewed efforts to swim on his side and face. Ten days later he was able to propel himself through the water in these positions, turn on his back, and pull himself up by the ropes unattended. Up to this time he had had to be strictly watched, but now he was practically independent in the water.

On JAN. 23, when the tank was fuller than usual,

the patient found he could walk a few steps alone, without support. After a week of practise he could walk about thirty feet in this fashion. A few days before the patient walked alone in the tank, he took a few steps on land, aided by two canes.

By FEB. 1 he could walk eight times the length of a twenty-foot room. He was not sure of his balance and had to be closely watched. An error in placing the canes or a buckling of the wrist was sufficient to throw him off balance.

On FEB. 6 the patient recovered himself in the middle of the tank. Entirely unaided he stood up erect.

On FEB. 14 the patient walked with canes for half an hour, without losing his balance once.

At the time of writing the patient is slowly, but steadily improving. The next step in the treatment will be to teach stair climbing and descending.

ANALYZED WALKING

In teaching this patient to walk, we have analyzed the movements of the walk, teaching one phase at a time, then putting the whole together.

SITTING

1. Hip flexion.
2. Knee extension, coming down on heels.

STANDING ALONE

STANDING

1. Raise up on toes.
2. Raise up on heels.
3. Stand with right foot in front of left; raise up on left toes; flex hip; extend knee and come down on heel. Bring foot flat to the floor and at the same time raise up on right toes and repeat movement.

Finally, the biggest factor of all is the grit and determination of the patient himself.

What Is a Physiotherapist?

By Julia Tuggle

How many upon being asked in what business or profession they are engaged and upon answering "I am a physiotherapist" have not had their reply received with questioning and even startled looks by the inquirer? Now and then the statement is received by one who knows—someone connected with the medical profession —someone who has received physiotherapy treatments or someone who knows somebody who has received these treatments. It is indeed a pleasure to have this the case for a general thing the attitude of the public is—what is a physiotherapist? Is it dead or alive? Is it animal, vegetable, or mineral? Besides those who know and those who admittedly don't know there is a third group —those who have a hazy but misconstrued idea of what it is all about. They are the ones who brightly say, "Oh, yes! I know what physiotherapists are. They give chiropractic or kind of an osteopathic treatment."

Then we also hear such phrases as: "A physiotherapist is the same as a masseuse; someone who gives those electrical treatments, you know, violet rays and things, like they give where I have my hair done; or you can get those physio-whatever it's called treatments at such and such hotel in connection with the beauty parlor." To these misinformed individuals of the third class we should at least give their dues and admit that they are warm in recognizing that there is a connection between the words physiotherapist and treatment.

A physiotherapist is a person trained to engage in the practice of physical therapy. That is to say treatment by physical means, as massage, water, electricity, and exercise.

The rest of this paper will be devoted to answering the question, as purported in the title, in a more detailed manner.

Personality plus adequate training and experience and natural adaptability to the profession all go toward making up the ideal physical therapy technician.

It might seem trite to speak of this age as one of specialization but on the other hand we must admit that such is the truth and as such the hackneyed phrase "age of specialization" has its place in the life of each individual whether in vocation or avocation.

We specialize! In the case under consideration it is the profession of physiotherapy. How do we specialize? Through an adequate course of training in hydrotherapy, massage electrotherapy and medical gymnastics. In what way is such a knowledge obtained? First the foundation is laid either by majoring in physical education at college or at a special school of physical education or by graduating as a trained nurse. It is necessary to have instruction in such fundamental subjects as hygiene, physiology, anatomy, zoology, physics, psychology and kinesiology before the more specialized courses in connection with the education of a physiotherapist can be undertaken. It is a thorough scientific course of study that forms the basis of the training but such is absolutely needed in order to specialize and carry on in our chosen profession. Those who have not qualified with such training in recognized schools have not the legitimate right to call themselves physiotherapists.

We receive our orders for treatment of patients from the doctors and so that we may understand their instructions to us and interpret them in correct terms we must know the fundamental subjects as listed previously or be all at sea and unable to do correctly and intelligently the things that are expected and required of us by the medical profession. Whether a physiotherapist is practicing professionally in a private office, a doctor's office, or in a hospital he or she is dealing with a sick person and in order to safely care for that patient certain knowledge is indispensable.

Accepted that the foundation in certain scientific fundamental subjects is a prerequisite in order first to understand and execute the orders given us by the doctors, for it is through the medical profession alone we receive and treat patients. A patient is referred through a doctor and it is only by such a method the patient can ethically come under the treatment of a physiotherapist. In the second place this fundamental knowledge is needed so that the person under treatment can be scientifically considered by the physical therapy technician as a human being whose internal and external organs act thus and so in relation to each other and to other objects. We must do more than to merely look at the patient in the light of a personality pleasing or otherwise, a man or a woman, attractive or unattractive. Then in the third place the knowledge of the basic subjects is needed in order to take up and understand the special subjects required for the profession of physiotherapy. That is to say so that we can intelligently study and practice to the best of our ability massage, hydrotherapy or treatment by means of water, electrotherapy or treatment by means of electricity, and medical gymnastics or exercise passive, assistive, resistive and active. Thus the knowledge to carry out and understand all of these four forms of treatment by physical means is required of the physiotherapist and the practicing of which is physiotherapy or treatment by physical means.

In treating a patient the physiotherapist must keep in mind what he or she is doing, why it is being done and the desired end to be reached. If the technician giving a physiotherapy treatment keeps these three things in mind it can be seen that adequate training is needed to aid in the accomplishment whatever the end may be.

Let us suppose a massage is to be given! The average person will say that he just loves to be rubbed. Rubbing and massaging may be the same to the lay mind but in practice how different. Rubbing can be termed a haphazard passing of the hands over a surface in aimless (probably useless or injurious) and inexperienced gestures by an individual who is willing and perhaps is trying to do his best but doesn't know what it is all about or how to do it. The whys and wherefores of the technique of massage belong to the great unkonwn as far as the one doing the rubbing is concerned.

The term massage as defined by Miss Mary McMillan in her book, "Massage and Therapeutic Exercise" is as follows: "Massage implies a scientific manipulation of the body tissues." Specific knowledge is needed by the technician to perform the five movements as listed under the heading massage. They are effleurage or stroking movements which may be heavy or light and are done

with the whole palmar surface of the hand. Petrisage or kneading is done with the whole palm or with the finger and thumb. It affects the deeper blood vessels, lymphatics and nerves. Secretions and excretions are promoted by it. In the third movement of massage, which is friction or circular friction, the operator uses the tips of the fingers or the fingers and thumb, bringing pressure to bear in a circular manner upon underlying structures. Tapotement, the fourth movement, is a series of brisk blows and may be performed in four ways—hacking, clapping, tapping, and beating. Tapotement helps capillary circulation and may stimulate or quiet the nerves and brings about muscular contraction without the will power being exercised. The last is vibration, which is done with one finger, several, or even with the whole palmar surface of the hand. It conveys a trembling sensation by the operator. A stimulating effect is produced upon the glands and the nervous system. It may be seen that massage is something quite different from rubbing. Scientific manipulation requires technique. Anatomy and physiology must stand the operator in stead, too, it is readily seen.

Hydrotherapy, another branch of physiotherapy must be studied with regard to its own special requirements in technique. An understanding of physiology and anatomy is necessary to know the action and reaction of treatment by water upon the superficial and deeper tissues as well as upon the nervous system as a whole. The use of treatment by water both as a sedative and a stimulant must be understood by the operator to get the desired results. The beneficial use of hydrotherapy for mental ills as well as physical ills has been proven in the state hospitals for the insane where hydro treatments play a big part in the routine care of mental cases. A trained person with the ability to watch and see how the patient's system is responding to the treatment needs be in charge. How the patient's heart reacts to the treatment, how his nervous system responds, must be obserbed by the operator. Just knowing to turn the hydro apparatus is not enough, for with only such a mechanical understanding great damage can be done.

In electrotherapy as in hydrotherapy the same is true in regards to the necessity of the operator knowing the proper technique to carry on treatments by means of electricity. But we as physiotherapists are concerned with more than the mere mechanics of turning off a switch or turning it on. We want to know why we are doing it, what we are doing and the end to be attained. There is more to electrotherapy than the idea that now the current or light is on and now it is off attitude of the unscientifically trained. We must be able to know and grade the action of the treatment upon the patient and his consequent reaction. This is done through study and training. In order to do it we must have a knowledge of physics and chemistry as well as anatomy and physiology. Physics is needed to understand what the electricity itself is doing and chemistry to follow its reaction upon the patient. Anatomy and physiology are necessary so that the lights and electrodes can be placed correctly upon the desired spot. Electrotherapy is a field that is increasing in scope all the time. But we must understand thoroughly what has been accomplished and look at what is being accomplished with an open mind—capable of adapting the valuable and discarding the useless. We must know our sciences so that we can intelligently limit the cure-all claims that are made unwittingly or otherwise by individuals.

The fourth field of the physical therapist is that of medical gymnastics or exercise. Besides physiology and anatomy in this fourth branch the technician must know something of kinesiology or the science of motion. Usually the untrained operator does not realize the great value of medical gymnastics and therefore, as a rule, prefers to adopt more spectacular methods of treatment such as offered in electrotherapy or hydrotherapy depending upon their psychological value rather than their actual value.

The inadequately trained may realize the value of exercise but in using it without the proper training and background may work irreparable havoc upon their victim. There are dangers to be considered in exercise being given by a person not properly trained. First there is the danger of not giving the patient sufficient exercise, which involves the possibility of not getting the maximum return to function for the patient that could have been acquired if the proper amount had been given. Of course we must recognize that there are some cases which would have recovered without any special treatments other than the general use exercised by said individual in his general mode of life. Now, the second danger of the use of exercise by the insufficiently trained is that of giving too much. The patient may be forced by such an operator beyond the limit of advisability. Under such a catastrophy would come a rebreak in a fracture case through over forcing or the tiring of an injured nerve beyond its power of endurance. The physiotherapist must not only have knowledge of how to grade the exercise but must also know the right type of exercise to be given—whether it be for cases of fracture, scoliosis, paralysis, general posture or feet.

Which form of treatment by physical means or which combination of the four forms is used by the physical therapist depends entirely upon what the patient is being treated for and the end to be accomplished by the treatment.

The physiotherapist must have adequate training to practice intelligently his or her profession. In any line experience counts for a great deal. There is a sureness and mellowness developed in an individual when once the asset of experience is added to adequate training giving an invaluable combination. It is true of all professions. It isn't just by the handling of one or two or three cases but by the handling of hundreds of cases that a store of knowledge worth drawing upon is founded. Adequate training gives the opportunity to get the utmost from experience as it is presented and opportunity to see and do gives the desired experience.

Considering the phrase "natural adaptability to the profession," what is meant? A person who naturally has a good professional manner—one who inspires the confidence of the patient—would have such a quality. The manner can be acquired but some have it to start with and how fortunate for them. Some people naturally have a pleasing touch when massaging while others, no matter how hard they work to attain this, never quite come up to the standard of others. The question of physique comes under this heading. A strong athletic person is at an advantage for the work of the physiotherapist is actively strenuous. However, a person may not have come by any of these qualities naturally and still make of himself or herself an excellent physiotherapist. It is just a question of being a great deal easier if he happens to have them.

In speaking of the ideal physiotherapist the words "personality plus" were used. The pluses—that is the training, experience, and natural adaptability have been discussed. Purposely the last thing to be considered is that of personality because it is the most highly debatable element. Most people engaged in the business world and also those employed in purely social affairs recognize the value of personality. It may be defined as that quality or ability in an individual to put over something to (not

on although such may be the case in many instances) somebody else. It is seen in the high pressure salesman, the go-getter who by means of his individual appeal makes the sale. The purchaser gets the article not because of its intrinsic value to him but because the salesman had the ability to put the sale through despite any consideration good or bad of the object itself. The sheiks and the flappers speak of the "it" quality—their ability to put themselves over socially. Why does one doctor hold his patients while another can't—all things being equal? Why does one lawyer make a good trial attorney and another fail although he is as brilliant if not more so than the other? Personality! Here is something that has to be considered no matter who we are or what we do.

There are many arguments over the part that psychology plays in connection with physiotherapy and the patient. Some may say, "Oh, the results obtained from physiotherapy are 100% mental and so on down through 90%, 85%, etc. This matter is a paper in itself. However, with the records of cases at hand and the scientific experiments checked in the laboratories it is surely an error to give the majority rating of cure or improvement to mental reactions only. In brief, physiotherapy may prove very beneficial in treating psychopathic cases but it can be shown that it has definite physiological benefits through the records of cases. Charts may show improvement in angles of flexion and extension in treatment of fracture cases. Laboratories have shown the chemical reaction of the ultra violet rays in increasing the calcium deposit and metabolism rate. X-rays of arthritic conditions after a series of diathermy treatments show in many cases a lessening of deposit around the joints. Blood pressure taken before and after high frequency treatment shows a lowering of the blood pressure. These are records.

Arranging the qualifications of a physiotherapist in a desired order adequate training, personality, experience and natural adaptability would be the order personally preferred. Opinions are bound to vary but here personality has been placed second because it plays so large a part in the handling of patients. In the majority of cases the cooperation of the patient means so much in physiotherapy. If the physiotherapist can win over the patient and get him to do his part in the treatment of his case a big step toward the goal is reached. At the start a pleasing personality may win the patient but only for a short time unless this is backed by efficiency on the part of the technician. Unless this is true mere personality is not worth a thing. Results must be obtained. A sick person may enjoy a smile and an agreeable technician but unless relief is given after a period of time such accomplishments on the part of the physiotherapist are of little avail. The doctor and the patient both expect results. Therefore amiability must not be confused in any way with adaptability.

In electrotherapy and hydrotherapy the cooperation of the patient is not as necessary to derive the benefits from the treatments as in the case of massage and exercise. In those two forms so much depends upon the physiotherapist getting the patient's cooperation.

In considering massage unless the technician can make the patient relax there is a distinct disadvantage. A hypertension of the patient causing a tenseness of his muscles would decrease the value to be obtained by a massage.

Cases involving injuries where exercise is necessary as in fractures, sprains, stiffened joints, scoliosis and general posture work it is essential to make the patient realize his cooperation is needed. The physiotherapist has need of personality to put over this fact to the patient—that he must not only do his specific exercises to the best of his ability while under the supervision of the technician but also that he must do them at home. A few minutes a day or three times a week during the treatment alone won't bring results, but the patient must follow this up with work at home. Then the full benefit may be derived from the treatments. Put over this and more can be accomplished in a shorter time. If the physiotherapist can get the cooperation and confidence of the patient then all conditions are favorable for the maximum amount of possible improvement under treatment. The greatest possible improvement is what the doctors and the physiotherapist are working towards and it is a distinct advantage to have your patient "With ye instead of agin ye." If the help of the patient is not obtained then the time of improvement is retarded and the maximum amount may never be reached.

Personality and adaptability of the technician mean so much in handling the various types that come under treatment. We see the type of insurance case who has gone around from one office to another until he knows all there is to know (according to himself) about doctors and treatment. He is hardboiled and can't be handled in the same manner as a hysterical patient or as the nervous diffident foreigner or the self important social registerite. All classifications have their agreeable and disagreeable members. It would be untrue to say all the rich are haughty and all the poor are humble, for such is not the case. The truth, indeed, is that ladies and gentlemen are born not made. The rich woman may be courteous and grateful and so may the Italian laborer who comes under our care. On the other hand the rich man may be cranky and impossible to please and so, too, may be the working woman whose treatments are paid for by the insurance company. Human nature is variable!

Physiotherapists are meeting the public at large and dealing with the public individually as it were when so many different types come under the care of them during a day's work, fifteen or more to be dealt with somewhat intimately. We see people from foreign lands, young and old, white and dark, male and female, rich and poor, good and bad. Surely it is apparent that in order for a single person to meet them all with a certain amount of success the quality of personality is needed.

So it is that there are many things to be considered in answering the question, what is a physiotherapist? However there does seem to be one outstanding quality. They all (at least those I have met) seem to like their work. If they didn't they wouldn't be able to stay in it, for things that otherwise are just regarded as part of the day's work would be magnified into unbearable drudgeries. In consideration of the generally unfavorable conditions in which we see people—that is, when they aren't well—it is surprising how comparatively few disagreeable people there are and how many really nice ones.

501 Taylor St., San Francisco, Calif.

Some Exercises Used in the Treatment of Relaxed Arches

By Maria M. Kennedy

Conspicuous in the practice of Orthopaedic Surgeons are the cases of relaxed anterior and longitudinal arches of the feet. In most cases their management consists of the fitting of a proper shoe and toning up exercises for the relaxed musculature.

In our practice, patients are asked to buy a strong shoe or oxford with a broad flat heel, broad toe and straight inner border. Cork longitudinal arch supports of a moderate height may be built into these. Such lifts are lighter and less clumsy than the removable metal supports and really prove just as efficacious if the patient is properly trained in the development of foot muscles. While the muscles are regaining their tonus such light supports serve as a reminder that the arches must be held in good position. They distribute the weight more evenly and frequently in cases of metatarsalgia make it unnecessary to put in special pads to support the metatarsal arch. If there is chronic metatarsal pain, small spongy rubber pads may be placed in the shoe to support the anterior arch as well. In the large majority of cases of relaxed arches, supports should be considered only crutches to be used until such time as the muscles regain the strength necessary to support the arch.

A very satisfactory method of management of relaxed or painful feet is to have the patient report three times a week for treatment—baking, massage, and exercise. Aside from these treatments it is advisable to have contrast baths for painful feet twice daily at home. Exercises which have been taught should follow these baths.

Foot exercises are at best limited in variety. Over a period of months they can become very monotonous to the patient. In order to retain interest a frequent change of exercise is desirable. From time to time we have collected certain foot exercises used in different hospitals, public schools, schools of physical education, and in the United States Army. Many of the exercises are duplicated in these lists, but from them we have gathered a fairly diversified group of foot exercises. Following is a compilation in common use with us:

Metatarsal arch:

1. Sitting: pick up marbles with toes, carry across other foot and drop in box.
2. Sitting with feet parallel on towel—toes gathering towel under feet.
3. Standing with feet parallel on block or book—curl toes over its edge.
4. Sitting—spread and relax toes.
5. Standing with feet parallel—flex toes hard enough to raise arches.

Longitudinal arch:

6. Sitting with knees crossed—foot circling—down, in and up.
7. Sitting with ankles crossed—rise to a standing position with feet in same position, coming well up on ball of feet. Change feet and repeat.
8. Sitting with legs supported on stool, with feet hanging over edge—soles of feet together, legs straight and knees touching—draw feet up, then down.
9. Place weight on outer side of feet—knee bending.
10. Toeing in and rising on tiptoe, come down lightly on outer border of feet.
11. Toeing in—rocking motion, raising heels, then rocking back and raising toes.
12. Place a heavy rubber band around table leg near the floor. Sitting with both feet on the floor, arches well up, outer border of one foot resting against table leg. Place the rubber band around forefoot—turn foot in, keeping heel firmly on the floor. Repeat with the other foot.

Metatarsal and longitudinal arch:

13. Standing with feet parallel—floor gripping, raise the inner border of feet, toes and heels remaining on floor.
14. Sitting—legs supported on stool, turn right foot up and in, one motion; hold position and turn toes under—relax foot. Repeat with left.
15. Standing—with toes turned in, heels apart, rise on toes, throwing weight on outer border of feet, roll ankles out, lower heels, keeping knees straight.
16. Walking with toes in, placing heels down first, directly in front of toes of rear foot, weight on outer border of feet.

Heel cord stretching:

17. Standing with right foot in front of left and with right forefoot on elevation—swing weight forward, keeping right heel on floor, lifting the left from the floor. Repeat left.
18. Standing with support—bend knees, keeping heels on the floor and back perfectly straight and in a perpendicular position.

Such exercises are applicable to adults of any age, and are useful with children just as soon as they can be taught any other lessons. With discrimination most of them may be used as well to tone up the muscles of those cases where plastic operation for flatfeet has been done. The large majority of relaxed and painful feet can be benefited to a degree making life endurable in this respect. It is a reflection on orthopedic surgery and physiotherapy for this large group of patients to be going about ignorant of the help they may have, or drifting to various cults for exploitation.

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All changes of address must be sent to the Secretary, Treasurer, Director Bureau of Appointments and General Manager of the REVIEW. This will assure delivery of important notices and of the magazine. No second class mail is forwarded.

EDITORIALS

Convention, 1931

The tenth annual convention of the American Physiotheraphy Association will be held in Philadelphia, Pa., on June 8, 9, 10 and 11, 1931.

The officers will preside and the regular business of the Association will be transacted.

Bear in mind that it is contact with others in the profession that gives the physiotherapist a broader vision.

Each member, whether old or new in the field, has something to contribute.

A tenth year is an important anniversary. Join with the ever increasing membership body that proves the growth and strength of the Association.

EDITH MONRO, President.

This little taste of spring-like weather, with its promise of more to follow, reminds us that June is not so very far off and with its bright warm days comes the annual convention with its promise of renewed friendships, new friendships and much of professional inspiration. We meet in Philadelphia this year at the same time as the American Medical Association, June 8, 9, 10, 11, with headquarters at the Pennsylvania Hotel, and have many good things in store for you.

Our program will be something like this: Monday afternoon a wonderful opportunity for meeting each other over a cup of tea. In the evening there will be papers by our own members who have chosen most helpful topics. The morning sessions, with exception of Thursday, when there will be a most instructive Round Table discussion of "Department Administration," will be devoted to the business of the Association. Be sure to have your delegates well informed and instructed. Tuesday afternoon we will visit some of Philadelphia's many hospitals and clinics and that evening will be free so that those who so desire may do a little "sight-seeing." Wednesday noon the Officers have their luncheon where many problems for the mutual benefit of Chapters National Association will be discussed. That afternoon the Orthopaedic Section of the A. M. A. meets and there have been so many requests for an opportunity to attend this section that we are not going to put anything on our program for that period. Wednesday evening will be our Orthopaedic Section and we have very excellent papers promised for that time. Thursday afternoon will be devoted to Electrotherapy and here again our speakers have been provided. Then "last but not least" Thursday evening comes the banquet which is always such a happy ending for our very delightful conventions.

The local Philadelphia committee are arranging delightful trips and visits to clinics and places of interest, in which Philadelphia abounds, and we feel sure there will not be one dull moment so all put on your "thinking cap" and plan to be "among those present."

The Pennsylvania Chapter sends a list of a few of the most convenient hotels so that you may make early reservations, a very advisable procedure, as the A. M. A. will rather tax the hotel accommodations.

ASSOCIATION HEADQUARTERS, THE PENNSYLVANIA HOTEL

	Single		Double		
Name	Without Bath	With Bath	Without Bath	With Bath	Suites
Adelphia, 13th & Chestnut	.....	$4-6	.....	$6-10	$12-20
Bellevue-Stratford, Broad & Walnut	$4-6	$5-9	$6-8	$7-13	$20-30
Drake, 1512 Spruce	.....	$4-6	.....	$7-10	$12-15
Pennsylvania, 39th & Chestnut	.....	$3-5	.....	$5-10	$12 up
Warburton House (women), 20th & Sanson	$2.50	$3-4	$4	$5	$6

Standard Records Contest

The contest is on. Two hundred and fifty dollars go to the winner. Material must be in the hands of the chairman of the contest on or before Feb. 1, 1932. The winner will be announced in June of that year at the annual convention. The object of the contest is to formulate a system of records to be universally inexpensive, to be practical and that shall show progress or the lack of it during the course of treatment. It is intended that these records shall demonstrate what a given modality will or will not do and to furnish an easily understandable check-up of the progress of cases under treatment. Contest material should be mailed to the chairman, Miss Kaiser, Mount Sinai Hospital, Cleveland, Ohio.

N. S.

Elsewhere in this issue appears an article on "Rational Therapy in 'Rheumatism'" by Doctor Edward A. Rich. Miss Babb, Secretary of the Washington Chapter of the A. P. A., says that they held their January meeting at his new clinic. Doctor Rich and Doctor Goering (his assistant) conducted the group through the clinic, explaining the method of heating the glucose and pumping it into the tanks. Those who had come early were given an opportunity of trying the Saline and the Glucose baths. Incidentally, Miss Babb says, one smells like molasses candy after the latter. The vaccines obtained from Doctor Crowe were exhibited and explained with the methods and the classifications of the types of arthritis. Pamphlets of sane information are given from time to time to the patients—three of them are quoted below.

I

THE STORY OF "RHEUMATISM"

Arthritis or "rheumatism" is an age old affliction and has, up to recent years, been considered practically incurable. It ranks next in importance to heart trouble and tuberculosis as a chronic disability.

The recent studies and experiments by eminent bacteriologists, physicians and surgeons have shown that arthritis is a disease that can be alleviated. These men by their untiring efforts to help those sufferers, have come forward with the news that arthritis is due to certain bacteria and it can be fought by vaccines much in the same way as other known bacterial diseases are overcome.

Arthritis is one of the most disabling of diseases known today. In one of our eastern states 150,000 cases in a year were reported suffering from this affliction—amounting to a tremendous economic loss to that community. Conditions such as these are highly remedied by prompt and proper care of the individual. The important axiom being to "nip it in its bud."

It is a chronic disease, incipient in its onset—creeping on slowly, much the same as tuberculosis. Therefore, it takes a long time to do away with it. Courage and patience are necessary and absolute obedience to instructions are required. You, as patients, should give yourselves a rest and help nature in the business of getting well.

This Clinic is giving all the world has to offer as the latest in the treatment of "rheumatism." Do not get discouraged if results are not immediately forthcoming—it will take time.

We do not claim the impossible, such as making stiff joints movable (these conditions can ofttimes be taken care of surgically); but we do know that pain and discomfort and prevention of deformities can be conquered and great improvement be expected.

This "Rheumatic Center" is one of the first efforts of doctors of the regular medical profession in America to systematically care for arthritis or "Rheumatism."

The center aims at an "all-around" treatment, consisting of the newer vaccine treatment as used by Dr. Crowe of London, medication by means of drugs given both by mouth and sometimes, when necessary, in the veins, heat in the form of saline and glucose baths and packs, massage and general care of the patient's diet, eliminations and rest. Each form of treatment is vitally important in connection with other forms, and, as a chain is no stronger than its weakest link, so results cannot be expected unless all the steps are properly followed out.

The Tacoma Center

Is not a charity, but it has taken into consideration the matter of the prevalence of Arthritis and the important matter of low medical costs. The founders thought it better to prepare for mass treatments and the lowest possible costs to the sufferers. At once, the specialist's usual costs to patients were cut in two, and the promise is made to the public that still further reductions will be made as volume of business increases. The staff is intent upon studying cases in the hope that even more light and easier methods of administration of treatments may be forthcoming.

The office hours have been arranged to accommodate both the doctors who must work and operate at the city hospitals in the mornings to relieve many of the stiff joints and restore much necessary motion; as well as accommodate working people by holding office hours from noon until 8 p. m. While it is very true that "rheumatism" is no trivial condition and never should be treated "on the run," still we cannot always bring about the ideal treatment and have to do the next best thing.

Patients First

This new center for "Rheumatism" will have no primary consideration other than the patient and his cure. Dr. William Goering is the medical director, Mr. Carl Wallace is the bacteriologist, and Dr. E. A. Rich is the orthopedic consultant. Other specialists will be added. The staff of physicians are not primarily seeking personal preferment and gain, and, in their work in which they are vitally interested, they are seeking results and scientific fact.

Further, it is the intention to hold public evening meetings for patients and others interested in "Rheumatism" at which times medical lectures, in common lay language, will be regularly given to make known the common facts about arthritis.

II

GENERAL INSTRUCTIONS AND DIETS

Important

Follow these rules carefully. The success of the treatment depends upon your undivided cooperation.

1. Take treatments regularly.
2. Get plenty of rest—at least fifteen hours of the twenty-four must be spent in bed. Rest frequently during the day.
3. Drink at least one gallon of fluids a day, water supplemented by milk, buttermilk, tea and fruit juices.
4. Don't sit or lie in draughts. Beware of uneven body exposures, such as wet feet and chilling.
5. Above all, avoid constipation and have habitual movements.
6. Do not over-exercise. Careful exercises will help you.
7. Follow diet as outlined.
8. Exercise your best judgment at all times. Remember that your foremost aim is to build up your body and to put yourself in the best possible physical condition. Sunshine, fresh air, the right food, comfortable living and good cheer are vital factors in the business of getting well.

About Constipation

Authorities all agree that much of your arthritis is due to improper elimination and constipation.

Habit Time—Bowel movement should take place at a definite time each day. This is an important factor in your treatment.

In a high percentage of cases bowel movement is a thing of habit and habit determines whether individuals are constipated or not; this is fundamental.

Select a definite time and never vary five minutes each day. Why have treatments failed? Failure of the individual to adhere to a definite time at which the bowels are to move.

What are some of the results of this condition? This abnormal delay in the passage of the intestinal contents through a portion or portions of the gastro-intestinal tract will result in the absorption into the circulation of a greater quantity of the toxic or poisonous material.

This condition is known to be intimately connected with many cases of rheumatoid arthritis. Organisms causing this disease are made active by having the vitality of the tissues of the body weakened by the absorption of the poisons from chronic constipation.

To establish the habit time—a laxative or the taking of an enema may be required at the beginning; but in a few days spontaneous movement will occur and the assistance of the laxative may be reduced or entirely eliminated.

Try your best to establish the habit time and the habit will take care of itself.

III

ABOUT THE FOODS YOU EAT

Diet

The following list of acceptable foods is commended:

Soups

Light broths—vegetable soups without lima beans and potatoes.

Meats

Allowed once every day. Lean beef, lamb chops, chicken and roast mutton. Very sparingly of fat bacon, sweet breads and boiled ham.

Fish

Fresh fish—salmon, halibut, perch, sole, trout, bass and cod, any way except fried. Raw oysters permissible.

Vegetables

The more digestible, such as asparagus, stewed celery, green peas, carefully boiled cabbage, lettuce, water cress, endive, cauliflower, Brussels sprouts, string beans, and well cooked spinach. Raw tomatoes.

Breads

Not more than one slice white or dark bread each meal.

Eggs

Soft boiled and poached.

Fruits

Fresh ripe fruits, such as apples, pears, peaches, plums, grapefruit without sugar, oranges. (No grapes.)

Fluids

Drink water freely between meals—a minimum of ten glasses daily. Tea, buttermilk, whole milk; and coffee once a day with one to two lumps of sugar.

Desserts

Simple puddings, custard, fruit jello and stewed fruits with little sugar, junket. All desserts must be taken sparingly.

NOTE: Eggs, milk, fruits and lettuce are foods that are high in the necessary vitamine and should be freely used in the above diet. Cheeses, such as Swiss, Edam and cottage, may be used to advantage as substitutes for meat.

Foods to Avoid

Preserved, corned, smoked, salted or canned fish or meat; duck, goose and turkey; kidneys, tongue, stews; herring, shell fish or mackerel; liver, sweet breads, tripe.

High seasonings, such as mustard, peppers, garlic, paprika and spices, should be avoided.

Vegetables to avoid include potatoes, turnips, carrots, parsnips, beets. These may be added later, during the progress of treatment.

Use no malt liquors or wines.

Rich pastries, candies, cakes, preserves and the like must be entirely excluded from the diet.

The above diet, as outlined, is very flexible, and is amenable to changes as the progress of the case indicates. The progress will be determined by your improvement. Consult the Center physician.

The proper diet is an important accessory to the successful treatment of arthritis, and must be considered seriously.

Model Menus

BREAKFAST

One-half grape fruit or one glass
orange juice (No sugar)
One to two poached eggs with
One slice toasted bread — One pat butter
One glass whole milk or
One cup coffee (with one tablespoon
cream, 1-2 cubes sugar if desired)

LUNCH

Tomato and Cottage Cheese Salad
(No Mayonnaise)
One Slice Rye Bread — One Pat Butter
Spinach — Carrots
One Glass Whole Milk or Buttermilk
Coffee—if working man

DINNER

Sirloin of Beef, Lean (One Slice)
Cauliflower — String Beans
Fresh Fruit Salad
(Four heaping tablespoons, no Sugar or Dressing)
One Slice Bread — No Butter
One Glass Whole Milk or One Glass Buttermilk.
Cup Tea

If one egg only is taken, two heaping teaspoons sugar may be used on fruit or in drink.—Medical Rheumatic Center, Tacoma.

Some time ago the Northern California Chapter of the A. P. A. brought out the *Bulletin;* now the Wisconsin Chapter issues its quarterly *Home Town—Thistle Down News.* What a fine spirit of interest and cooperation these show. More power to yez! We cannot refrain from reproducing Vol. 1, No. 1, of the *Thistle Down News:*

Home Town-Thistle Down News

Published Quarterly by the Wisconsin Chapter of the American Physiotherapy Association, Milwaukee, Wisconsin

Vol. 1 — January, 1931 — No. 1

HAPPY NEW YEAR TO YOU ALL

WE HAIL THE CHRISTENING OF OUR "HOME TOWN-THISTLE DOWN NEWS"

This we hope to be a means of contact in each other's doings. All of us are invited to make this quarterly publication interesting both socially and professionally. Tell us about your work;—what is being accomplished; new activities, and not forgetting your off duty time. Send your contributions to Miss Lucy E. Blair, 1104 North Marshall St., Milwaukee, not later than March 15th.

Miss Mildred Elson has returned to our midst after a delightful sojourn of six weeks in Boston and whereabouts.

Miss Ellen Hurtgen recently was relieved of her ap-

pendix but is now on duty at the Junior League Curative Workshop.

Sandy Holt of Appleton, spent the Christmas holidays at her home in the east.

We welcome Miss Goldie Grear to our Wisconsin Chapter. She is participating as physiotherapist at the Milwaukee hospital. The growth of this new service will be watched with a great deal of interest.

Miss Martha Lewis will begin her activities in charge of the Physiotherapy Department at the new State Orthopedic Hospital for Crippled Children in Madison on February first. Milwaukee people grieve to have her leave, but feel proud that Madison will gain her personage. Her "infant," the West Allis School for Crippled Children, has established a respected foothold in Milwaukee County, and the pioneer work done by Miss Lewis will not soon be forgotten.

Miss Elizabeth Jones has been released from the Junior League Curative Workshop to act as assistant physiotherapist to Miss Oklman at the Lapham Park School. This school has grown tremendously in the last two years, necessitating a new addition to their much crowded building. One hundred and sixty children are now enrolled, new equipment has been installed, and a larger teaching staff engaged.

Miss Florence Phenix has been engaged for many weeks at La Crosse County in her survey work. We wonder how she knows where she will lay her head at night.

This fall we have been having a poliomylitis epidemic throughout the state. In Milwaukee sixty cases have been reported up to date. All the cases in the city have been referred to the Physiotherapy Department of the Visiting Nurse Association by the City Health Department, for investigation in care and treatment. Patients are guided to expert orthopedic advice, bed patients are treated by the physiotherapy department of the Visiting Nurse Association, and as patients progress they are referred to the Junior League Curative Workshop and the special schools for further supervision.

The annual meeting of the Wisconsin Association for the Disabled will be held on January 22nd in Madison.

B. Claire Miller of Kenosha spent the Christmas holidays in Nebraska. We wonder how she traveled—via roller skates or airplane?

The first 1931 meeting of the Wisconsin Chapter will be held in Milwaukee, at the Knickerbocker Hotel, 286 East Juneau Avenue, on January 24th at 6:30 P. M. Kindly send dinner reservations to Miss Goldie F. Grear, 1447 North Franklin Place, Milwaukee.

The doors of the Milwaukee Children's Hospital Convalescent Home were officially opened on December 14th, 1930. This generous contribution by Mr. and Mrs. L. R. Smith deserves much admiration. Everything has been done to make this truly a place where a child should have the advantage for health and recreation. The quaint early American furnishings with bright colors bring amnesia for pain and illness. The pictures are choice—old prints and fairy tale characters—dear to any child's imagination.

The entire building radiates sunshine, health and beauty. Any patient having the opportunity of long time care in this delightful place should be a much better being, both mentally and physically.

We hope that every one of our members will take the opportunity of visiting the convalescent home when they attend the dinner meeting on the 24th of this month.

At our annual meeting the following officers were elected: President, Mildred Elson; Vice-President, Florence Phenix; Secretary, Martha Lewis; Treasurer, B. Claire Miller.

By the Way

1. The Executive Committee in response to many requests has a standard form for chapter constitutions. This will be hailed with delight by those committees who are not sure whether "Qualifications for Membership" should be under Constitution or By-Laws, or other quips and pranks that Articles and Numbers are apt to play.

2. Filene—who have been carrying the association arm bands, pins and uniforms—inform us that they have on hand for immediate delivery the emblems for the sleeves of the uniforms. We have found, particularly in hospital work, that these sleeve emblems are a most dignified way of identifying the physiotherapist from others of the hospital staff who likewise do not wear caps.

3. We are glad to announce that Kable Brothers Company, who do the printing for THE PHYSIOTHERAPY REVIEW, have written, in response to our question, that they will be able to take care of all of the Association's printing. This means that now it will be possible for the chapters to have their stationery and other work done in a uniform manner. The new die of the official trademarked insignia will be in their hands and the words American Physiotherapy Association will always be in identical type.

4. Wanted: PHYSIOTHERAPY REVIEW for June, 1921, and March, 1923. Please communicate with Library, Department of Hygiene and Physical Education, Wellesley, Mass. Similar requests are constantly being received, so that our reserve files are rapidly diminishing. If there are any members who have old copies of THE REVIEW with which they are willing to part, will they get in touch with Miss Beard.

A Comparative Study of the Therapeutic Effects of Physical Exercise and Ultraviolet Light

By Robert L. Johnston, M. D., Cleveland Clinic, Cleveland, Ohio

For centuries the medical profession has been concerned chiefly with the problem of healing the sick while only in very recent years has the science of preventive medicine received any degree of attention. Such procedures as vaccination against smallpox and typhoid fever, immunization against diphtheria, and colds, protein desensitization for hay fever and asthma, are attempts at conferring more or less specific immunity for a period of time. Asthenic, hypotensive individuals in whom upon examination no outstanding pathological condition is apparent, nevertheless are likely to have a low general resistance against infection and little physical endurance. Often no intensive study of these cases is made and no upbuilding treatment is undertaken, then later, a period of absence from work of from one to three months may not only be disastrous to the worker but also to those who may be dependent upon him. It is to this large group of breadwinners who constitute an important part of the working machinery of every great industry and institution that the report of the research described here is addressed.

In these experiments initial cardiovascular and metabolic studies were made in the case of each subject. Subsequently a study was made of some of the effects of physical exercise on the cardiovascular system and on metabolism, and also a study of the effects of ultraviolet light therapy. Further experiments are in progress and will be reported later.

Methods and procedures. The exercises which were conducted by Mrs. Stoner consisted of a fifteen minute period of calisthenics taken each morning at 8:15. The posture silhouettes and corrective exercises were executed by Miss Anna Wetterhuus, physiotherapist-in-charge. The ultra-violet light treatments were also administered by Miss Wetterhuus three times weekly until twenty or more treatments were given with a standard mercury quartz light, air cooled. These treatments began with two exposures of the entire body, anteriorly and posteriorly, at a distance of 30 inches, for a two minute period. Each of the four periods of exposure was increased one minute daily up to fifteen minutes after which the distance was decreased one inch at each treatment until the light was 25 inches from the patient.

After the completion of the basal metabolism determinations blood pressures were taken with the individual in the fasting state. Readings were taken until duplicate readings checked, then the patient stood up for two or more minutes and readings were taken until duplicates checked satisfactorily, after which the standing pulse was counted.

Exercises for testing the circulation consisted of stationary running, 60 paces in 30 seconds, timed by a metronome.

Physical examinations, blood pressure determinations, and metabolism tests were personally conducted by myself, assisted by Miss E. W. Mick, metabolism technician.

Unless otherwise stated, in each instance where "metabolism" is mentioned in this paper it signifies the gaseous exchange determined by the closed circuit method, and therefore estimated by the oxygen consumption of the individual.

The relation of daily calisthenics to pulse rate and blood pressure in persons under par. This study disclosed that many persons working indoors at more or less sedentary work, who have no acute illness but feel definitely below par, show two or more of the following conditions:

1. Arterial hypotension.
2. Blood ptosis.
3. Hypometabolism.
4. Fatigue facies and general lassitude.

By a careful study of the mechanism which may bring about any two of the above-named conditions in a person at the same time, it may be seen how these conditions may bring about a decreased capacity for work. The body cannot function as a machine without the consumption of fuel. The combustion of the fuel in the cells is directly dependent upon a rapid and efficient supply of blood during the performance of work, and the same is true to a less extent throughout the life of the body even under the most basal conditions of relaxation or sleep. The capacity for doing work is dependent in a large measure upon cardiovascular efficiency. The energy output is relatively dependent upon the heat production, and the production of heat is likewise a function of the oxygen consumption of the cells. The amount of oxygen which is consumed in the tissues is therefore in a large measure dependent (1) upon the efficiency of oxygen transportation by the blood stream and (2) upon the rapidity at which the cells can utilize the oxygen which is transported to them. Therefore the organism as a whole can be handicapped by a defect in the transportation system, and this defect may be expressed by arterial hypotension, by blood ptosis, or by both; or by a defect in the utilization of the transported commodities, that is, the glucose and oxygen. The latter condition is well known as one of hypometabolism and is measured by a determination of the basal metabolic rate.

Arterial hypotension is very commonly observed to be associated with hypometabolism. It is not so well known, however, the blood ptosis is so frequently present in these individuals who have arterial hypotension and hypometabolism. Blood ptosis is frequently overlooked because it is not sought. Blood pressure readings which are found to fall within the ideal range of approximately 115/65 when taken during a general examination may drop to nearly 100 systolic while the patient is lying in a basal position. If the patient is now asked to stand up, the blood pressure usually will rise momentarily only to fall within about two minutes to a level considerably below 100. If the decrease in diastolic pressure parallels that in systolic pressure, the condition is favorable. If, however, on repeated examinations there is a conspicuous narrowing of the difference between systolic and diastolic pressures so that the standing

pulse pressure is very little more than half the recumbent pulse pressure, there is well marked blood ptosis, and such a person will usually manifest two or more of the following conditions:

1. Marked fatigue on prolonged standing, relieved promptly by lying down.
2. Dizzy spells; migraine-like attacks.
3. A tendency to faint.

Crampton called this condition *blood ptosis*, and considered it a deficiency of vasomotor tone, an indication that a rest or vacation is needed.

The relation of daily calisthenics to metabolism. Fifty-five determinations were made on eight subjects in order to study the effect of daily mild exercise on basal metabolism in persons more or less physically inactive. All the tests were made between the hours of 8:00 and 9:00 a. m., the subject sleeping at his own home and resting for 30 minutes before the test. In the case of about one-half of these individuals the basal metabolism was essentially uninfluenced by the course of exercise. In the others there was a moderate increase in the average basal metabolic rate apparently resulting from the course of exercise.

The percentile increase in metabolism during the first minute after a mild test exercise (hopping or stationary running 60 paces in 30 seconds) is considerable and varies as much as from 200 to 300 per cent in different individuals. This test of metabolic response to exercise is being adapted for clinical use and a report of it will be published in the near future. In this way persons in the case of whom a diagnosis of hypometabolism has been made can be differentially tested to show whether they perform work economically or with a great expenditure of fuel. This test may possibly aid in differentiating those cases of hypometabolism which are due to thyroid deficiency from those which are due to other debilitating causes.

The question arises: If there is no considerable increase in the basal blood pressure, pulse rate, and metabolism following a course of exercise, what is the explanation of the physical improvement which is noted in these individuals? Individuals who have arterial hypotension, especially when associated with hypometabolism and blood ptosis, tend to have more or less constant circulatory asthenia especially when standing. The circulatory load is light, the demand upon the heart is small, the body fires burn low—body temperature is often subnormal, constipation is common, and there is usually little incentive to exercise. When any unusual exertion is necessary the organism is physically unprepared. Let it be recalled here that even mild physical exercise does the following:

1. Elevates blood pressure 20 mm. or more.
2. Elevates pulse rate 20 or more per minute.
3. Increases the body temperature momentarily.
4. Opens up quiescent capillaries.
5. Increases the body combustion rate several hundred per cent over that of the resting combustion rate (metabolism).

The effect of the above phenomena is an improvement in cell metabolism. We are all familiar with the benefits to be derived from proper intestinal catharsis when a toxic condition is present in the organism. The term "blood catharsis" is suggested to designate the condition which prevails when an individual more or less sedentary of habit indulges in well-regulated exercise. While intestinal catharsis removes toxins from the gastro-intestinal tract, blood catharsis is more far-reaching; it removes toxins from the body cells (1) by a burning-out process, (2) by increased transportation both to and from the cells due to increased cardiac output, increased pulse pressure and pulse rate.

If a toxic condition is present but the individual is too ill to take exercise, a very rapid blood catharsis can be secured in an emergency by having the patient omit breakfast and drinking two glasses of water hourly for about four hours. If food is taken with the water, the rate of excretion of the latter is considerably delayed.

Posture exercise. In the majority of cases of hypotention accompanied by hypometabolism, direct observation or a silhouette photograph of the individual will reveal defects in posture, predominantly those of grades C and D. This posture defect is very probably due (1) to the lack of normal muscular tone associated with hypometabolism and arterial hypotension, encouraging the leaning or slumping urge, (2) faulty habits of posture assumed by tired children in the public schools. For such individuals posture exercises are certainly indicated because (1) they have the same characteristic beneficial effect on the circulation as any other general body exercise (2) they are both corrective and prophylactic against deformity. By such corrective measures the force of gravity is placed over the more efficient weight-bearing centers, removing stress from atonic muscles which have already been overstretched. In accomplishing this goal, team work is necessary and group competition is desirable; the patient must co-operate, and must know the benefits which may be secured. The making of periodic silhouettes stimulates interest and encourages competition in securing good results.

Effect of ultraviolet light on blood pressure, pulse rate, and basal metabolism. One hundred and seventy blood pressure readings and forty-two basal metabolism determinations were made in the case of six subjects all of whom had some degree of arterial hypotension; most of them had hypometabolism. As a result of ultraviolet light therapy changes in basal blood pressure and basal pulse rate were either absent or insignificant in degree. There was not, however, any instance in this group in which improvement was not noted by the subjects, as manifested by two or more of the following criteria:

1. Increased appetite.
2. Increased physical vigor.
3. Gain in weight.
4. Improvement in physiognomy.

The subjective benefits are so definite and unmistakable that many individuals voluntarily return to the Physical Therapy Department two or three times a year for repeated courses of ultraviolet light therapy.

Let us recall that the generally accepted indications for ultraviolet light therapy are well established for the treatment of disturbances in calcium metabolism such as rickets, tetany, and spasmophilia. It is beneficial also in obstinate cases of Lupus erythematosus,[1] in which the water-cooled mercury vapor quartz light is used locally. Gilbert, of Northwestern University, is among those who are opposed to the use of ultraviolet light in all cases of pulmonary tuberculosis. Those who use it for the treatment of this condition are agreed that its use must be avoided when fever is present. A. B. MacLean[2] finds ultraviolet light most satisfactory in the treatment of tuberculosis cervical glands, preferring the arc lamp to the mercury vapor type. He reports entirely satisfactory results in the treatment of many cases of osteomyelitis, but disappointing results in the treatment of asthma and of osteoarthritis. Dickson finds ultraviolet light of unquestionable value in

the treatment of patients with bone tuberculosis where adequate sunlight is not available, and considers it a valuable adjunct also in the treatment of many disorders in which the patient is generally run down and a tonic effect is desired. Mullins finds the use of the Kromayer water-cooled quartz light with special applicators very helpful in the treatment of tuberculous laryngitis and thickening of the pharynx, but not of much value in the treatment of sinus conditions. J. Ferguson Smith,[3] writing of its use in dermatological conditions, considers the carbon arc light the most valuable single measure in the treatment of lupus vulgaris, but also reports good results from the use of the mercury vapor lamp. Good results are reported in the treatment of scrofuloderma, although not so good as in the treatment of lupus. Smith has seen two cases of inveterate sycosis clear up under general treatment with the carbon arc light. He discredits statements that ringworm of the scalp (microsporon) in children can be cured by the ultraviolet rays, and also considers it useless in the treatment of erythemas, exfoliative dermatitis, rodent ulcer, lichen planus, lichen simplex chronicus, and acne varioliformis. He finds that Acne Rosacea is generally aggravated, but recognizes the general tonic value of the ultraviolet rays in the majority of cases. Dorne[4] made a careful study of the red and white blood counts platelet count, coagulation time, and hemoglobin content after ultraviolet irradiation, and also reviewed the literature on this subject. He observed in normal men a slight increase in hemoglobin, a decrease in coagulation time in 60 per cent of the cases, and an increase in blood platelets of 100 per cent in every case studied. Perlman[5] reviewed literature pertinent to the effect upon the blood cells of general exposure to ultraviolet rays adding his own extensive investigations in regard to the hemoglobin, red and white blood counts, and differential blood counts, and differential blood count following exposures varying from less than five minutes up to 30 minutes. One hundred and forty-five patients afflicted with various maladies were studied and separate conclusions drawn from each group according to the individual disorder and according to the length of exposure to ultraviolet light. Naturally not all patients reacted in the same manner. The majority showed an increase in blood hemoglobin, red and white cells, polynuclears, and small lymphocytes, while the eosinophiles and transitionals in the majority were unaffected. Such changes might well account for an increased capacity for physical exercise (hemoglobin and red cells), and increased resistance to infection (leucocytes). The immediate improvement in appetite following a blood transfusion is well known. The improvement in appetite which follows a course of ultraviolet therapy may have a relation to the changes which have also occurred in the blood, as well as to the widely distributed formation of vitamin D in the already present ergosterol in the superficial tissue. Possibly vitamin D formed in this manner is more gradually liberated for use than when taken orally.

It has recently become known that the irradiation of certain foods such as whole milk, dried milk, oats, and especially ergosterol, results in the formation of vitamin D, and it is believed by many that the benefits which are derived from ultraviolet light therapy are due largely to the production of vitamin D through the action of the ultraviolet rays on ergosterol in the tissues.

It should be remembered that although we have in ultraviolet therapy a useful therapeutic adjunct, it is not a cure-all, and it is in no way intended to displace painstaking diagnostic procedures which seek out the cause of the malady. Not infrequently a careful examination reveals no particular defect except that the individual has a low blood pressure, low metabolism, is easily fatigued, and is subject to frequent colds. Some of these patients are overweight; many of them are underweight. The majority of those in the latter group undoubtedly receive benefit from ultraviolet light therapy; colds tend to disappear or become less frequent; appetite increases; there is a definitely increased sense of physical fitness. It may be said that ultraviolet light therapy should not be expected to take the place of the "daily dozen." If well marked hypothyroidism or hypometabolism from some undetermined cause is present ultraviolet light therapy must not be expected to take the place of necessary thyroid therapy. The time has come when we should cease to look upon one basal metabolism reading or one blood pressure reading as final. When we have before us the technically satisfactory results of three readings on different days and an agreement that in each instance the patient was in a basal state, we can then proceed on fairly sound grounds. If, however, there is a medical opinion that the metabolism is low and the physician is satisfied with one reading that is within normal limits, even if he has personally made the determination, he is discounting his diagnostic acumen, and this is true to an even greater degree, so if the determination has been made by some one else.

When the diagnosis has been satisfactorily established, at least to the best of the ability of the examiner with the aid of the laboratory, the indicated therapeutic procedures may be carried out in group sequence, giving attention to the more urgent disorders first, especially the one which brought the patient to the doctor. No one objects to a balanced diet; there is also no objection to a balanced therapy which seeks to meet all the needs of the patient. In addition to the eradication of established causes of ill health, attention should be paid to diet, exercise, hygiene, light (sunshine or ultraviolet). It is well known that local heat to a painful joint, whether administered by radiation, diathermy, or the paraffin bath, is decidedly beneficial because it increases the blood supply to the deeper parts. A rational prophylactic and therapeutic measure therefore in the case of the hypotensive, hypometabolic patient, also the so-called hypometabolic arthritides, is to increase the circulation to the organs and tissues (1) by physical exercise in the case of the ambulatory patient, and (2) by massage in the case of the decrepit patient. When local infection is already present, then heat plus rest is the method of choice for inflammatory conditions of muscles and joints. General ultraviolet therapy may well be included in the treatment on account of systemic tonic effect.

Thanks are hereby extended to all persons who have co-operated in making this research possible, especially to Dr. W. E. Lower, Dr. W. S. Duncan, Miss Anna Wetterhuus, Physical Therapist-in-charge, Mrs. T. Stoner, Physical Therapist, and Miss E. W. Mick, of the Department of Metabolism.

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Relaxation

By Pauline D. Paulson

The subject of relaxation is one that has had comparatively little attention or stress in the arts of healing or agencies of overcoming many of the ailments common to those who frequent hospitals and sanitariums for relief of nervous maladies from which they are suffering.

Like many other means of cure, insomnia for instance, it *is so simple* that it lacks appreciation. The advice given by physicians, nurses, physical directors or the home folks is perhaps accepted in a matter of fact fashion and you say, "Oh, yes, that is right; I know I should relax, but I cannot." Nothing has been said about *how* to go about it and how this can be accomplished, and advice remains only advice, nothing more.

Relaxation to many people means just lying still, without any idea of completely letting go of tension of body and mind or really resting.

Relaxation must be accomplished by practice. The patient must learn the method and then follow it. I don't say "try" but DO it. However, simply ordering one to relax without specific instructions as to how to go about it is in most cases a waste of breath and means nothing.

Begin by putting yourself in as comfortable a position as possible, preferably lying on your back, with arms and legs outspread, on a bed not too soft. You should feel that you are resting heavily upon something that gives you support. Something hard, like the floor, gives you a sense of being held up, so to speak. Let every part of your body rest heavily. Do not press down but let go of yourself and rest easily and quietly. This is helped by inhaling deeply and exhaling gently (no forced breathing).

Be on good terms with yourself and the world. For the time being, at least, dismiss all thoughts of care and worry. Replace them with a quiet sense of gratitude. Carefully enumerate all that for which you ought to be thankful. A sense of gratitude is conducive to relaxation.

Complete relaxation may not be maintained long at first but if one is to attain results, it is necessary to have a definite plan to follow. All you need to do when your mind begins to wander is *just begin* over again. Don't get discouraged or impatient with yourself because you fail to relax sufficiently for restful sleep in the first attempt. Repeat and repeat!

This method has been tried and has proven successful in repeated cases of insomnia and nervous disorders. All I ask is that you try it for yourself.

"Rest is not quitting the busy career;
Rest is the fitting of self to its sphere."

Abstracts

By John S. Coulter, M.D.

Occupational Therapy for Physical Disease. An Annotation in The Lancet (London) II:XIX:1028, November 8, 1930.

Much has been heard lately about the importance of occupational therapy for mental disease, but less is written in this country about its value in all kinds of illness and convalescence. As applied in most institutions at present it is still in the somewhat amateur form that characterized occupational therapy in mental hospitals twenty years ago. Wise nurses give their patients little tasks to perform, and convalescent homes and like institutions provide unexacting games and sports. At the Toronto General Hospital occupational therapy has become a very important routine feature. The regular staff of the hospital includes assistants known as "aides" who have had a special two years' course in their subject, including instruction in anatomy, physiology, hygiene, psychology, and all kinds of handicrafts and remedial exercises. These aides work in close cooperation with the doctors, both in the wards and in the workshops. The hospital provides the materials and takes any profits from the sale of the finished goods. On the whole it is found better not to allow the patients any percentage of profits, as this makes them want to work at the more paying handicrafts instead of those particularly suited to their illness. For patients who do not need hospital care the work has been organized by the Ontario Society of Occupational Therapy, which obtained a charter in 1920. This society maintains a workshop where patients work under a doctor's prescription. Here the cardiac, arthritic or nervous patient can be useful, self-respecting, and wholly or partly self-supporting, and patients with special disabilities can be set to do interesting work which will exercise just those particular muscles which need to be brought into play. For example, a marked improvement was obtained in arthritic hand by making flowers out of beads and wire; a man with a badly injured wrist gradually restored it by working a shuttle on a weaving loom, and the value to the restless or depressed patient of regular construction work needs no emphasis.

Three important results were obtained in London from an experiment of this kind at the Royal Free Hospital. The first was the mental benefit, which, of course, was anticipated. The second was the physical benefit; it was found that return to work was accelerated far more effectively by occupational therapy than by any kind of physiotherapy treatment. A man with a stiff elbow would be set to sawing and planing under a skilled carpenter; or a man with a dislocated shoulder would be set to sandpaper bed table surfaces, raised each day a little higher until he was working above his head. The third value of the work, which was quite anticipated, was the remarkably effective test it provided for the malingerer or case with psychological retardation of recovery. The man who was genuinely keen to get back to work welcomed the occupational clinic with enthusiasm and reported his daily progress with pride. The man who did not want to return to work grumbled at the clinic and said it did him no good, but generally returned to his work quicker than he would otherwise have done, since he found his treatment "too much like work." Occupational therapy has therefore not only the obvious merit of leading a man gently across the bridge from complete idleness to full work, but might also prove a considerable economy to the country in sickness benefit. As a commercial proposition the work needs subsidizing, for there is undoubtedly a difficulty in selling the goods made under these circumstances. Here a well organized voluntary society, like the Toronto one, could be a great help but apart from voluntary aid insurance companies might well find expenditure of this kind an economy.

There is at the present time some difficulty in obtaining assistants trained in occupational therapy. It is a branch of physiotherapy work which demands considerable ability and intelligence and should make a special appeal to educated women. There is an excellent opening for a physiotherapist who will start a center for private patients. A room divided into ten or twelve cubicles would serve a great number of patients coming by appointment for a certain number of hours a week, according to their doctor's prescription, to work at the loom, the carpenter's bench, the jig saw, the puzzle bench, potter's wheel, or any of the various kinds of handicraft. It is, however, of the utmost importance that the work should be directed by the medical man and that the profession generally, should take a discriminating interest in the anatomical and physiological principles underlying the restoration of function, and in the particular variety of work or play best suited to bring about the desired result.

Intracapsular Fractures of the Neck of the Femur. John J. Moorhead, M. D., New York, in Jour. A. M. A., 95:20:1494, Nov. 15, 1930.

I have abandoned the early immobilization method in nearly all cases and now resort to traction until union is attained, and I then allow the patient to become ambulatory in walking calipers or a plaster spica.

Both knees are flexed to from 150 to 165 degrees.

Moleskin adhesive plaster is applied as high as the groin on the inside and to the crest of the ilium on the outside. This encircles the limb except for a spacing of a few inches on the anterior and posterior surfaces. It is held by spiral strips of zinc oxide adhesive plaster and a gauze or muslin bandage into which adhesive plaster is intertwined to prevent slipping.

The two lateral straps of adhesive plaster extend three or more inches below the femoral condyles and a spreader is then attached to them.

To the spreader a cord is fastened and this in turn leads to a pulley at the foot of the bed or to the overbed frame of the Balkan type.

The limb is widely abducted and internally rotated manually, or that position is attained by the traction. As a guide, a cross is marked on the middle of the patella and the patient and attendants are cautioned to keep this marker pointing straight upward.

A weight of from fifteen to thirty pounds is attached to the cords and the foot of the bed is elevated on blocks ten or more inches.

Adhesive plaster is applied to the sole and to this is attached a cord to permit knee flexion.

Lateral traction, if required, is obtained by adhesive

plaster passed around the limb as close to the groin as possible. A spreader is attached to the adhesive plaster and this in turn leads to a cord and weights hung to an upright at the side of the bed opposite the great trochanter.

Within from forty-eight to seventy-two hours, reduction is usually accomplished.

The weights may be gradually reduced after four weeks and usually are removed for a test after from six to eight weeks.

Weights are discarded if: (a) the limb does not rotate; (b) pushing up or pulling down on the leg gives identical roentgenograms; (c) the weights can be pulled up, or the limb can be lifted off the bed by the patient. A period of one week is now allowed with no support except a long sandbag on the outside of the lower thigh. Thereafter the patient is fitted with walking calipers and a pelvic band.

On an average the patient is in bed from ten to twelve weeks and up and about on calipers from six to twelve weeks. Thus the disability period approximates from four to six months.

From the first, the patient is urged to shrug the kneecap and otherwise contract the quadriceps. When available, massage of the limb is provided, and later certain "setting up" exercises for the extremity are prescribed. In other words, physical therapy is made a coincidental and not a retroactive element in treatment.

ADVANTAGES AND DISADVANTAGES

This fracture is placed in the group in which inspection and mobilization are provided after the manner of other joint fractures. The disadvantage is stated to be that this fracture demands immobilization for success; with this statement I do not agree.

The general condition and nursing care of the patients are enhanced by the freedom thus provided. The claimed disadvantage is that too much freedom is thus provided.

There is no apparatus to impair the local or general circulation; the patient may assume a semiseated position; decubitus can be avoided. On the contrary, it is asserted that a properly applied abduction casing of plaster of paris provides equal security against identical complications. With that view my experience does not correspond.

This method affords ample opportunity for inspection and coincident physical therapy. Per contra, it is urged that inspection and physical therapy are not needed in this type of fracture. From that view I also dissent.

Classification, Diagnosis and Treatment of Arthritis. J. W. Torbett, B. S., M. D., F. A. C. P., Marlin, Texas, in Texas State J. M., XXVI:7:485, November, 1930.

All possible sources of focal infection, including devitalized teeth, should be searched for and removed. If rarefaction be present, infected sockets should be curetted. In chronic cases, a constantly low poly and leukocyte count is usually present with low grade peribronchial post-influenza and other focal infections.

Deep breathing, proper diet, exercise, fresh air and rest should be advised to suit each patient's needs. The over-fed, fat patients with the hypertrophic type need baths and restricted diets, often fruits and grape juice alone for three or four days, to lose weight. The inflamed joints should have complete rest for a few hours each day. We teach the patient how to take the bath each night before retiring, and how to give themselves the ascending kneading massage over the limbs and also the abdomen and liver, this treatment to be continued on returning home. Massage is not used nearly so much as it should be in chronic and convalescing cases. All medical nurses should be trained to give correctly general and special massage. In our occupational therapy department we teach the chronic incurable patients to make many little artistic things to keep them busy, and correct their dwarfed introspective psychologic states. Radiant heat and light applied after the baths for ten minutes, usually help these cases; also diathermia may be of benefit, but frequently both make the acute infectious types worse if applied to the joint already inflamed instead of beyond it where heat and massage should be given in such cases. Cinchophen and colchicum, and diet are of value in the gouty cases, but the long use of cinchophen is injurious. Thyroid, pituitary and ovarian substance, correctly selected are often of value in the endocrine and menopause types. Heat increases the alkalinity of the blood, dilates and hastens the capillary circulation, furnishing more phagocytes and promotes elimination and better nutrition. We do not recommend colonic irrigations for every case, but we have a department in each bathroom where such continuous irrigations are used every second or third day in suitable cases, in which the patients have indican or urobilinogen in the urine, small greenish mucous stools of bad odor and are often griped easily by laxatives. The patients with anemic and atrophic types are given frequent feedings and more protein as milk, buttermilk, cheese, peas (basic foods); some meat, chicken-gizzard, and one egg (acid-forming foods); the green leafy vegetables and apricots, peaches and raisins (basic iron vitamin foods) instead of acid-forming foods; baked potatoes which are 7 per cent alkaline. Honey or molasses (iron vitamin alkaline foods) should be used instead of so much sugar. Robust patients are often greatly helped by a diet of fruits only, for three or four days.

In acute cases with fever the patients are bathed in bed, and given all physiotherapy treatments by portable machines; also, the electric light cabinet sweats so valuable in cases of nephritis with edema are employed.

Our experience is that while shock therapy by large intravenous injections of phylacogen or milk may promptly help eye cases, gonococcic arthritis or salpingitis in some instances, the reaction obtained makes the method unpopular. We prefer the method of Warren Crowe of London, beginning with only 100,000 staphylococci and streptococci for the first dose, increasing every third day and stopping on the occurrence of any reaction. We now use mixed polyvalent stock and autogenous vaccines containing several strains, beginning with 5,000 the first dose.

Physical Therapy in General Practice. John S. Coulter, M. D., Physical Therapy Department, Northwestern University Medical School, Chicago, Ill., in Wisconsin M. J., XXIX:11:627, November, 1930.

HEAT

We now have a scientific basis for the use of heat early in injuries, especially in fractures, and it should be used from the first day.

The time to use elevation, heat, massage, diathermy and active exercise is at that time, if possible; it is more important than later in the course.

Every general practitioner has numerous uses for external heat, and should have in his possession several appliances to give this heat. For instance, the most satisfactory manner of applying hot, wet dressings is to apply the dressings to the part, keeping the dressings wet with the selected solution and keeping the dressing hot with an electric baker. In this manner an exact even temperature can be maintained indefinitely without cooling or danger of burning the patient.

Again in arthritis and rheumatoid conditions it is im-

portant for the physician to prescribe something for the local treatment of the pain while he is endeavoring to find the underlying pathological condition causing this pain. In the treatment of our arthritis cases the patients are loaned bakers or other methods of applying local heat with definite directions to use them one, two or three hours daily. These directions are mimeographed along with directions for massage and exercises.

MASSAGE

The physician should be able to prescribe massage as he would drugs. Cases should never be sent to a masseur without definite instructions. It is often better to instruct a member of the family to give this massage.

EXERCISE

In injuries to joints a knowledge of muscle action is important in the diagnosis and treatment.

Exercise, therefore, in shoulder joint dislocation or fractures of the upper end of the humerus should be started early.

In the use of relaxed motion for early motion in shoulder injuries the patient bends forward while standing and rests the forearm of the unaffected side on a table for partial support. The patient's body is raised and lowered on that side by flexing and extending the knee on the same side, thus causing the affected arm to swing in circumduction without muscular effort.

It is the duty of every physician prescribing exercise to give definite directions as to the kind and amount. For instance in these cases with a paralyzed deltoid, definite instructions should be given to remove the splint only when lying on a firm bed with the arm in the same position as in the splint on a sheet of powdered cardboard to obviate all resistance to movement.

Deltoid reeducation is started first in the position with outward rotation in the shoulder, flexion at the elbow and supination of the hand. The patient's elbow is supported by the operator's hand, and lowered about 15 degrees from the angle used in the splint and he is asked to abduct it to the original position.

Success in the treatment of injuries can be increased by the combination of physical therapy to prepare the part with the use of heat, massage, etc., for the activity of occupational therapy. Physical therapy finds its limitations in the psychological element. The patient can be told to exercise but unless occupational therapy is used there is no incentive and interest provided to continue the exercise. In physical therapy the patient's attention is focused on the injury while in occupational therapy his interest is in the work.

Any physician can arrange for a patient to have occupational therapy. Two methods of home occupational therapy are given.

Ultraviolet radiation can also be used by every general practitioner. It has a definite field of usefulness in rickets, in a certain few skin diseases and in surgical tuberculosis.

In skin diseases our dosage and indications have not been definitely described. As an auxiliary method of treatment it has a value in acne vulgaris, alopecia areata, seborrheic dermatitis, angiomata, for the stimulation of granulations in burns or in the preparation of infected granulations, tissue for skin grafting, in certain eczemas, purpura, psoriasis and tuberculosis.

One of the simple remedies available to every physician without cost to him or his patient is water. For instance, in hyperpyrexia in infants, if the infant is nervous or restless or has had convlusions on previous occasions, the physician should give the mother definite directions to give a sheet bath if the temperature is 103 degrees. A rubber sheet is laid upon the bed. A linen sheet dipped in water at 90 degrees is partly wrung out and laid on this. The patient is laid on this and the sheet is wrapped around the body. The shock is overcome by the mother passing her hands over the sheet. As soon as one part becomes warm the sheet should be sprinkled with water at 70 to 90 degrees F., depending on the patient's condition, and again the friction with the hands. It may be given for a half hour or longer. It should always be remembered that there is no danger of a patient with a temperature of 103 degrees F., or over taking cold by this measure.

In conclusion it is to be noted that physical therapy will yield its best results for the general practitioner if simple agents are used and with a definite written prescription their use, not only in the office, but at home by the patients.

A New Method of Preparing Diathermy Electrodes for the Head and Neck. Frank J. Novak, Jr., M. D., Chicago, Attending Otolaryngologist, Lake View Hospital, in Clinical Med. & Surg., 37:11:826, November, 1930.

One cake of impression compound is dropped into the basin of hot water, at about 130 degrees F. This softens the compound within a few seconds and it is then placed over the area to be treated and slight pressure applied until the compound conforms exactly to the surface to which it is being applied. A cold towel is applied while the compound is in good contact with the surface, to stiffen it, after which it is removed with some care to prevent distorting it. It is dropped into a basin of cold water, where it "sets" immediately. The mould is then wiped dry and it is applied again to the skin, to see that there has been no distortion incident to removing the warm compound from the face.

If the fit is perfect, the next step is to cut out a piece of x-ray foil, conforming exactly to the size and shape of the area to be treated. This foil is next laid upon the compound mould and smoothed over the surface with the thumb.

The next step is to attach the metal to the compound, which is done by heating the screw driver considerably less than red hot and running it rather rapidly over the edge of the x-ray foil. This melts the compound directly under the foil and will cause the metal to adhere securely to the compound.

The two cup-hooks are now attached to the back of the mould. In order to do this satisfactorily a small piece of compound is softened in hot water and formed into a small cone or pyramid with a flat base. This pyramid is cooled in water to harden it, is picked up with a pair of forceps and the base held at the edge of the flame until it just begins to run. It is then brought in contact with the back of the mould and allowed to harden. The other hook is attached in the same manner.

Tuberculosis. Scholl et al in Section on Urologic Surgery in Archives of Surg., 21:5:885, November, 1930.

Lowsley and Duff (O. S. Lowsley and John Duff: Tuberculosis of the Prostate Gland, Ann. Surg., 91:106 [Jan.] 1930) stated that tuberculosis of the prostate gland is a frequent accompaniment of genital tuberculosis, but that it does not occur so often in urinary tuberculosis. Of the genito-urinary organs, the spididymis is most often affected by this disease; the kidney is next in frequency and is followed closely by the ureters and bladder. The seminal vesicles are occasionally the site of tuberculosis, usually after tuberculous epididymitis of long standing, and the prostrate gland is least often affected. Primary tuberculosis of the gland is extremely rare. Tuberculosis of the genito-urinary tract

is found at necropsy in a little more than 2 per cent of cases of pulmonary tuberculosis. In 70 per cent of the cases of urogenital tuberculosis there is coincident tuberculosis of the prostrate gland, and in a small fraction of 1 per cent primary tuberculosis of the gland.

The diagnosis of tuberculosis of the prostate gland is very difficult, especially if it occurs in conjunction with benign adenomatous hypertrophy or if hard nodules are discovered on digital examination when the patient is of cancer age. If it is remembered that in all cases of urogenital tuberculosis the prostate gland is involved in 70 per cent, earlier diagnoses can be made and the chance for cure or of proportionate lengthening of life is increased.

Surgical procedures are not ordinarily indicated in cases of tuberculosis of the prostate gland. In most cases in which the tuberculous gland has been removed, it was removed because of a mistake in diagnosis. It is Lowsley's practice to subject all patients to a continual period of observation and care. Some are given treatment by alpine light or by quartz light and others are given Koch's old tuberculin in graduated doses. Lowsley and Duff have used tuberculin for more than three years, not alone but as an adjunct or subsidiary agent in a regimen of treatment consisting of hygienic and dietetic measures, rest, mercury vapor, quartz light, heliotherapy and the urologic measures indicated. The general plan is to combine the urologic treatment with the tuberculous treatment to the extent it is applicable and adaptable to the needs of the individual patient.

Twenty-one of Lowsley and Duff's patients with tuberculosis of the prostate gland were operated on; only two operations were on the prostate gland. One of the two patients died a few weeks after leaving the hospital. Another patient improved under palliative treatment. Eight of the patients were given tuberculin and apparently were benefited. None of the patients was harmed by the tuberculin.

Technic of Therapeutic Exercise. J. S. Coulter, M. D., and C. O. Molander, M. D., Chicago, in Jour. A. M. A., 95:18:1342, Nov. 1, 1930.

Therapeutic exercise is the scientific supervision of bodily movement, with or without apparatus, for the distinct purpose of restoring normal function to diseased or injured tissues. There are two types of therapeutic exercise—passive and active.

Passive exercise is that form of bodily movement which is carried through by the operator without the assistance or resistance of the patient. Mennell (Massage, Its Principles and Practice, Philadelphia, P. Blakiston's Son & Co., 1920) uses the term relaxed movement.

The chief aim of passive movement is to maintain suppleness and by so doing prevent contractures and the formation of definite adhesions or the general matting of soft tissue.

Stretching of contractures and old adhesions in chronic conditions should not be confused with passive movement.

There is a highly beneficial maneuver which can be applied at this stage in the treatment. The procedure is termed static exercise and can be practiced by the patient at home while his arm is in a splint. Joint motion does not take place. It is the alternate contraction and relaxation of a muscle or group of muscles without movement of the joint. Static exercise is used in the early stages of acute traumatic injury or when it is impossible to obtain joint movement in chronic cases.

Active exercise is that form of bodily movement which is carried through by the patient, with or without the personal supervision of the operator, and is divided into assistive, free and resistive exercise.

Assistive exercise is that form of bodily movement, which the patient performs, assisted by the operator or some mechanical means such as a pulley and weight. Its chief objective is to enable the patient to accomplish more than he could do unassisted.

Free exercise follows the assistive type and is defined as that form of bodily movement which is carried through by the patient against the least possible resistance. To do this the body of the patient and the injured muscles are placed in such a position that gravity exerts no resistance to graded arc movements of the arm or leg to be manipulated.

True free movement can be more easily obtained by the use of a sling or by placing the limb in a warm water bath, or, lastly, by the use of a smooth rectangular board, well powdered and placed in a horizontal position. Each of these methods tends to reduce the friction to a minimum and produce truly free movement.

Resistive exercise is that form of supervised bodily movement with or without apparatus which offers resistance to muscle action. The resistance applied must be different for the different phases of the movement.

As the range and strength of musculature increases exercises at home can be prescribed and apparatus and different forms of curative occupational therapy can be used.

It is the duty of every physician prescribing exercise to give definite directions as to the amount and kind.

Muscle reeducation is that form of therapeutic exercise given to muscles in which the neuromuscular coordination has in some way become partially destroyed. To reeducate muscles under such conditions two things are necessary: first to reestablish a better coordination between the remaining nerve fibers and cells supplying the affected muscle, and, second, to secure the contraction of the desired muscle, however feeble.

Curative occupational therapy is a form of therapeutic exercise which requires a series of specific voluntary movements, initiated by the patient, which form component parts of a more complex and coordinated movement. This exercise is designed for the express purpose of securing definite end results and is a direct incentive for the sustained effort.

Beevor's classification is given herewith for the normal shoulder joint. These movements summarized, are flexion, extension, hyperextension, abduction, adduction, horizontal adduction and abduction, and internal and external rotation. Each of the movements, together with the number of degrees possible, is given for the normal shoulder.

The routine management of a sprain of the shoulder joint is given, and also a list of home exercises for the shoulder.

Curative occupational therapy for shoulder cases should be definitely prescribed. It can be used in any place with a little ingenuity. For instance, "braid weave" rug weaving may be used. No shuttle or beater is necessary and no sewing is required. The method does not require a complicated loom. The loom can be home made; description is given.

In shoulder joint cases, therapeutic exercise is used according to the principles previously mentioned, starting with passive movement, progressing to assistive movement and using muscle training if necessary and then using free and resistive exercises, which include occupational therapy.

The Treatment of Corneal Disorders With Ultraviolet Light. Joseph W. Charles, M. D., in the Section on Ophthalmology in Progressive Medicine, Vol. II, June, 1930 (Lea & Febiger, 1930).

Hollas & Linkoz (Ztschr f. Augenh., 1929, 68:152) found that ultraviolet raying in eighteen cases usually stopped the progress of serpent ulcers and led to the quick cleansing of the ulcer floor. Nevertheless the authors' main reliance in these cases was still upon milk injections.

Gasteiger reported that among 75 cases of ulcus serpens treated with ultraviolet light 64 healed without perforation. It was also found satisfactory in ulcus eczematosum and serpens cornae.

Surgery in Dermatologic Practice. (The fields of plastic surgery and cosmetic surgery are not considered in this paper). George M. MacKee, M. D., and Melvin J. Stone, M. D., New York, in Jour. A. M. A., 95:18:1315, Nov. 1, 1930.

All forms of surgery performed in the dermatologic department, such as cautery, refrigeration, electrolysis, surgical diathermy, use of escharotics, injection of varicose veins and scalpel surgery, should be performed in the surgical unit under capable supervision. Surgical procedures utilizing physical agents for the destruction or removal of tissue are probably more functions of the surgical unit than of the unit of physical therapy.

The operations indicated in dermatologic conditions come usually under the arbitrary classification of minor surgery, but this in no way lessens the responsibility of the operator. Even minor operations occasionally result in the tragedy of undesirable or serious complications, or even in the death of the patient. It follows that surgical operations should not be attempted by the dermatologist or by any other physican unless the operator possesses surgical experience and unless proper facilities are available for safe and scientific performance of the operation. The operator should be able to judge the ability of the patient to withstand the shock of the operation. He should know how to minimize shock and how to deal with the various types and degrees of circulatory disturbance, should any of these occur during the operation. This applies to operations by surgical diathermy as well as to operations performed with the scalpel.

We believe there is a tendency to use surgical diathermy too much as a matter of routine in the destruction of cutaneous lesions. Too often the destruction is not thorough enough, or, on the other hand, there is excessive destruction of normal tissue with unnecessary scarring and prolongation of the period of healing. Often, in potentially malignant lessions, the tissue destroyed or removed is not checked microscopically for diagnosis or is so damaged by the high frequency current as to render a histologic diagnosis impossible.

Dermatologic Therapeutics Basic Principles and Technic. Moses Scholtz, M. D., in California and Western Med., XXXIII:5:770, November, 1930.

(From the Department of Dermatology, College of Medical Evangelists, Los Angeles, and the Los Angeles County General Hospital.)

Of all therapeutic resources available to dermatologists, physiotherapy is the most effective and powerful. It can be truly said that physiotherapy has revolutionized dermatologic therapeutics.

Ultraviolet light is indicated in all superficial, itchy infections, bacterial or mycotic, local or systemic dermatoses. X-ray should be used only in deeper infiltrating inflammatory dermatoses, infectious granuiomata, bacterial or mycotic, and in skin malignancy.

A principle that should be indelibly impressed upon the mind of a clinician using x-ray in skin disease is that the therapeutic skill of a clinician is measured by the smallest amount of x-ray used in obtaining desirable therapeutic effect.

Both in x-ray as well as in ultraviolet light, overtreatment is the most common error seen.

In actuality most of the major therapeutic effects obtained through ultarviolet light rays, such as anti-pruritic, bactericidal and stimulating regenerative, are obtained by small fractional or medium doses away below the erythema stage.

Superficially destructive and peeling effect of an erythema dose is desired only in a very small minority of dermatoses such as chronic circumscribed dry scaly mycotic dermatoses, acne, psoriasis, alopecia areata, and some other selected cases.

Hence, the fractional and medium dosage of ultraviolet ray is the most serviceable and desirable in the overwhelming majority of clinical dermatologic material. It is to be preferred in all acute and subacute inflammatory dermatoses comprising an enormous clinical group of eczemas, seborrhoic conditions, mycotic and pyogenic dermatoses and various types of pruritus, lichens, etc.

ULTRADESICCATION

One of the most effective weapons recently introduced in the dermatologic armamentarium is ultradesiccation, i. e., the unipolar variety of surgical diathermy. Ultradesiccation is a derivative of the old time high frequency spark brought to a high degree of mechanical efficiency.

Ultradesiccation can be truly called the best surgical dermatologic tool.

A great variety of small benign tumors and formations on the skin, such as warts, moles, benign cystic tumors, etc., can be removed quickly, asceptically and thoroughly with or without local anesthesia. One important advantage of ultradesiccation over surgery from a dermatologic point of view is the remarkable capacity of ultradesiccation of localizing its destructive effect to the smallest possible areas and sparing the adjacent tissues. This is very essential for good cosmetic results in removing small benign tumors from the face near the eyes, nose or mouth.

One of the most important fields of its clinical application is the destruction of skin carcinomas preliminary to x-ray or radium application. This procedure combines the advantages of quick destruction offered by surgery with the additional safety offered by prophylactic radiation.

The ultradesiccation wound heals possibly somewhat slower than the surgical, but it requires much less after care, gives a practical assurance against an infection and cosmetically gives most excellent results.

Pulmonary and Tracheobronchial Gland Tuberculosis In Childhood. T. C. Hempelmann, M. D., St. Louis, Mo., in Jour, Mo. M. A., 27:11:519, November, 1930.

The childhood type of tuberculosis is the result of a first infection with the tubercle bacillus and its characteristics are quite different from those seen in the tuberculosis of adult life. The usual sequence of events is as follows: In consequence of direct exposure to another individual suffering from the disease, the child inhales a certain number of tubercle bacilli some of which lodge in the lung and set up a "primary lesion" or focus of tuberculosis from which there is a rapid

extension of the process along the lymphatics to the tracheobronchial glands. In most instances a gradual walling off of the primary focus takes place and ultimately this lesion undergoes calcification. In the meantime the infected lymph nodes at the root of the lung become enlarged to the point where their presence may often be recognized by clinical signs or the roentgenogram. Such "hilum tuberculosis" is typical of the early childhood type of infection and in most instances the disease never progresses beyond this stage, the lesions becoming healed or quiescent. In certain instances the tubercle bacillus may enter the body through the gastrointestinal canal, in which case the lymph nodes first affected will be in the mesenteric group. Infection by this route is usually the result of the ingestion of contaminated food, such as milk and butter.

Infants are apt to be overwhelmed by the tubercle bacillus and often show dissemination of the infection to a number of organs. It is at this age, too, that miliary tuberculosis and tuberculous meningitis are most common. Frequently, and especially in the relatively mild hilum tuberculosis, there is a history of previous attacks of unexplained fever or of repeated coughs and colds during the winter months. As a rule fever is present and is apt to be higher in the afternoon than in the morning. As the disease progresses, however, there occurs loss of weight, asthenia and more or less anemia. Night sweats, which form such a prominent symptom of the disease in adults, are usually entirely absent in children. Hemoptysis, too, is rare in young children.

As aids in the diagnosis, the tuberculin tests and the roentgen ray are invaluable. The von pirquet reaction commends itself for routine work because of its simplicity, but it is important that the tuberculin used be a potent product, preferably tested out on known tuberculous individuals. If the test be negative, it should be repeated in eight days, or better, the intradermal test used, injecting 0.1 mg. of old tuberculin.

As regards treatment, the usual regime includes rest in bed during the febrile period, an abundance of fresh air and sunshine, high caloric diet, cod liver oil and the avoidance of respiratory infections, especially measles and whooping cough, which lower the resistance to tuberculosis. A word of warning should be given concerning the use of heliotherapy. This remedy, whether direct sunlight or some other form of ultraviolet ray, is often very beneficial in certain forms of surgical tuberculosis but may be positively harmful when there is an active process in the lungs. In the latter type of infection, if heliotherapy is used at all, it should be with the greatest caution for it is capable of causing hemoptysis and an exacerbation of the pulmonary symptoms which may have the greatest consequences.

Finally it must be emphasized again that if we are to cure tuberculosis we must recognize the disease in its early stages, and in children the earliest recognizable lesions are usually those about the hilum of the lung. And even though somewhat similar hilum changes are occasionally produced by sinus disease, repeated attacks of bronchitis, etc., it is better to err on the side of safety and treat such patients as potentially tuberculous until the true nature of the condition becomes apparent.

The Use of Mechanical Measures In the Treatment of Obstinate Edema. Edward F. Bland, M. D., and Paul D. White, M. D., Boston, Mass., in Jour. A. M. A., 95:20:1489, Nov. 15, 1930.

Of the local measures that have been employed in the treatment of edema in general, we shall discuss briefly the ones that to us seem of greater interest. They fall into three groups:

1. In relatively slight edemas, such mechanical procedures as gentle massage and elevation of the part lessen the tension, make the patient more comfortable, and promote the absorption of the excess fluid. These measures, in addition to medical treatment, are usually sufficient to control the situation.

2. The application of hypertonic solutions, usually a dressing containing a solution of sodium chloride in glycerin, has been employed and recommended by Carnot, provided the skin is intact.

3. In the presence of a large amount of fluid, several surgical measures for its evacuation are available.

The simplest, safest and most desirable method of treating obstinate edema of considerable degree is the one originally recommended by Southey. The skin at the sites selected for insertion, usually the outer and inner aspects of the lower parts of the legs, the dorsum of the feet, or the scrotum, is cleansed aseptically, a wheal is made with procaine, hydrochloride, and a small amount of sterile ointment is applied to prevent local irritation. The trocar and cannula are inserted deeply into the swollen part; the cuff of the cannula is held firmly with a clamp while the trocar is withdrawn and a small rubber tube attached. Two in each leg are usually adequate.

Light Bath Treatment of Tuberculous Peritonitis. Ole Chievitz, M. D. (From the Surgical Department of the Finsen Light Institute, Copenhagen), in British J. Actinotherapy, v:7:142, October, 1930.

The one thing which we must retain clearly in our minds, and upon which we base our present general treatment of tuberculosis is the tendency of surgical tuberculosis to spontaneous cure. * * * There is no doubt that the light-bath treatment is a valuable addition to our treatment of tuberculosis affections. It can be applied either by direct sunlight, notably in mountain health resorts; or, in the less fortunate lowlands, by means of artificial light-baths.

Waldenstrom (Acta Chir., Scandinav., LXIII, 1928) has shown that when the general state of health was improved by a successful operation for a secondary infection, and by light-bath treatment, obvious amyloid degeneration could in many cases be cured. This agrees with the fact that some of the most satisfactory cases we have to deal with are patients who on admission are in a very bad general state of health and suffering from multiple tuberculous infections. As a rule, these patients rapidly acquire a florid complexion and a great many minor foci are healed.

The most frequent complication, or perhaps rather cause of tuberculous peritonitis is tuberculous salpingitis. In general it is impossible to form any idea of how this disease reacts to light-bath treatment. We have treated a series of patients where the diagnosis was verified by means of an explorative laparotomy (frequently carried out in other hospitals), and where extirpation was not resorted to on account of the difficulties due to adhesions to the contiguous parts.

These cases of undoubted tuberculosis ran a varying course. In the minority of cases all the symptoms disappeared and the findings on exploration became normal. Whereas, in the majority of cases, the symptoms disappeared entirely (or nearly so), though they were sometimes found to recur after long intervals, and then again yield to renewed irradiation. Finally, there was a group which showed absolutely no improvement after prolonged treatment; and for this reason I was compelled to carry out salpingectomy.

The advantages inherent in light-bath treatment become most conspicuous in cases of postoperative complications, such as the formation of sinuses.

What Protects the Skin Against Light? Abstract in Can. Med. Assoc. J., XXIII:4:603, October, 1930, from J. State Medicine, 38:387, July, 1930.

After referring to the commonly accepted belief that the decrease of the sensitivity of the skin which results from repeated exposure to the sun is due to the deposit of pigment in the epidermis, Miescher goes on to review some of the objections that have been offered to this theory. The congenital hyperpigmentation of the negro's skin gives less protection against light than the pigmentation produced by exposure to light rays. Depigmented areas, as in vitiligo, can develop desensitivity to light. The most intense histological changes resulting from exposure to light occur in the stratum Malpighii, that is, in cells situated superficially to the pigment-containing basal layer. For such persons several authorities have recently minimized the importance of pigment in light-protection. Various alternative theories have not proved more convincing, so Miescher has investigated the matter and presents his findings in the paper under review.

Using the mercury vapor lamp as the source of the light, our author found that moderate exposure caused changes only in the upper layers of the stratum Malpighii. With stronger exposures the basal layers reacted, while with very strong exposures changes were traced for varying distances into the cutis. When moderate exposures were used it was found that injured areas were scattered between intact areas, and that wherever an injured area was detected there was a thin corneal layer, while the intact areas corresponded with a relatively thick corneum. The degree of sensitivity was found to vary inversely with the thickness of the horny layer. On the palms and soles, where the horny layers may be fifteen to fifty times as thick as in other parts of the skin, it is almost impossible to obtain a light reaction. Thin sheets of horny material, cut with a razor from callosities on the foot, were found to be effective light filters. And exposure to light was found to produce a rapid thickening of the horny layer of the skin. From all of which Miescher concludes that accustomization to light depends mainly on increased formation of the horny layer. In confirmation of this, he states that the conjunctiva of the white rabbit, which has no stratum corneum, is two hundred times as sensitive to light as its unpigmented skin, while the mucous membranes are also highly sensitive.

The protection afforded by the horny layer depends on two factors:—(1) dissemination of light through a cloudy medium, and (2) absorption of light. The second factor proved to be much the more important, as light filters of dried horny layer absorbed very little more than similar filters which had been clarified with glycerine. "The absorptive substances which, as building blocks of keratin, come into consideration are the aromatic amino-acids such as phenylanaline and tyrosin. These absorb the erythema-productive short-wave-length ultraviolet rays just as strongly as quinine."

Pigmentation, however, plays a protective role, but to the underlying connective tissue rather than to the epidermis. Raying of a spotted pigmented area with large doses injures both the pigmented and non-pigmented portions, but under the pigmented parts the cutis is intact while under the non-pigmented parts there is evidence of damage reaching deep into the cutis. The horny layer, therefore, protects the epidermis, while the pigment protects the cutis. It is probable, also, that the pigment has the function of absorbing certain of the caloric rays—the long waved visible and ultra-red rays—and thus prevents an excess of heat from passing the skin. This possibility has not been sufficiently investigated to warrant a definite statement.

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